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Labor-Saving Foundry Innovations Planned

Carousel and Apron Conveyors and Monorail System to Facilitate Casting of Automobile Motors— Core-Oven Room Ventilation—Unusual Sandblast Cabinet

BY EDWIN A. HUNGER

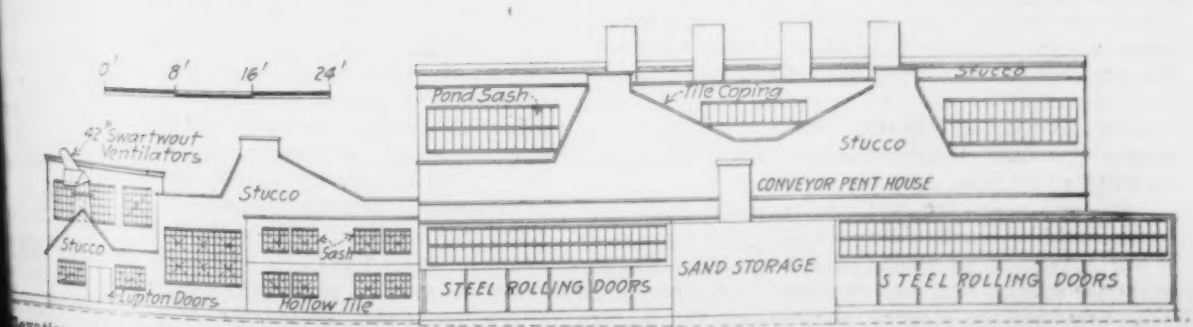
IN the new foundry which the Lycoming Motors Corporation, Williamsport, Pa., maker of automobile engines, is building to replace its present foundry, particular emphasis will be placed on the selection of numerous labor-saving devices. Wherever possible conveyors of various types will be used and efficient routing of work will receive special attention to reduce hand working to a minimum. In fact, it is figured that with the new foundry three times as much work will be possible with the same number of foundrymen as now employed.

Worthy of special note will be two large circular or carousel type conveyors, 60 ft. in diameter, 5 ft. wide and flush with the foundry floor which will move at a speed of 3½ to 5 ft. a minute (54 minutes to be required for one complete revolution at a speed of 3½ ft. per min.), and which will be used to expedite the making such large castings as cylinders and crank cases. Two apron type conveyors leading from these circular conveyors and extending almost the full length of the main foundry building will be additional labor-saving innovations worthy of particular mention. A special sand-blast cabinet through which castings are to be conveyed on an endless ladder chain provided with suitable hooks for suspending the castings as they pass through the cabinet and the scheme for ventilating the core-oven building are other noteworthy features that will help the new Lycoming Motors plant to stand out in advanced foundry design and construction.

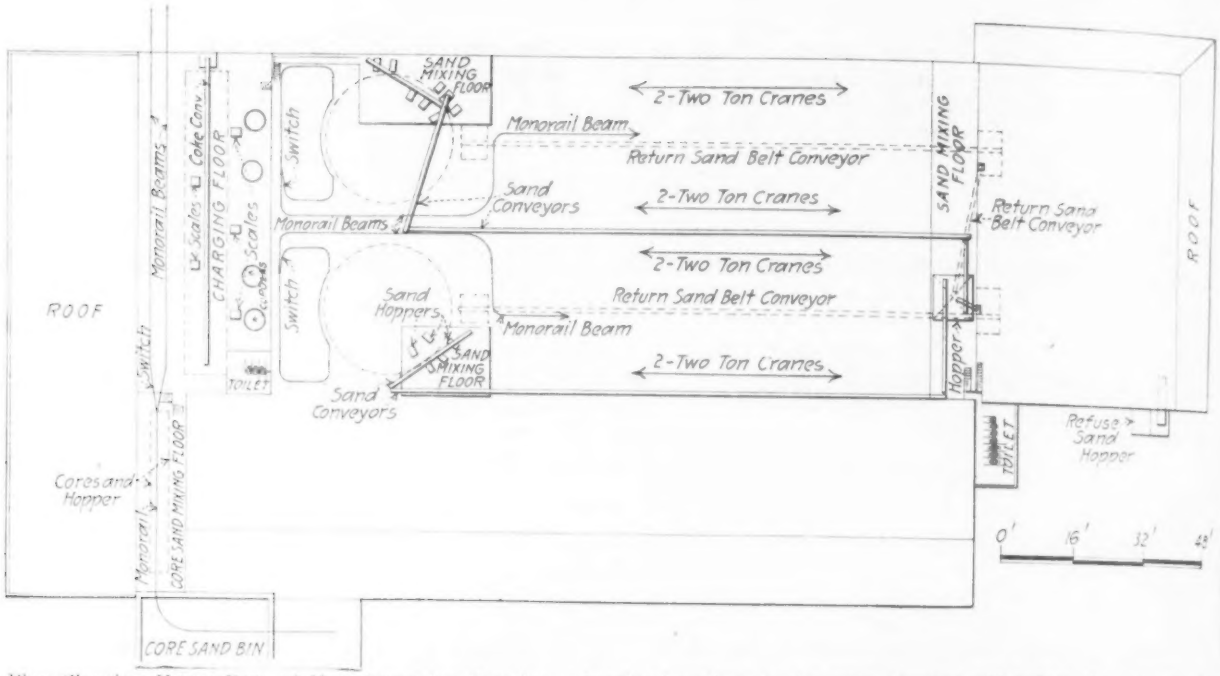
Credit for the design of the conveyor and sandblast arrangements are due especially to J. H. McCormick, general manager and F. M. Bender, chief engineer of the Lycoming Motors Corporation, and F. Arthur Rianhard, architect and industrial engineer of Williamsport who have collaborated and pooled their ideas with the purpose of making the new foundry the best in up-to-date and efficient construction.

The new foundry is being built on a tract of land of 15 acres, four of which will be under roof. It will be designed to turn out castings for 1200 complete automobile motors a day for which there will be a daily melt of 250 to 300 tons. There will be four cupolas with provision for two additional units to take care of future expansion. The big foundry is to be of all steel and glass construction and a total of 1800 tons of steel will be used in its erection. This steel is being furnished by the American Bridge Co. which is also erecting the steel part of the plant. The foundations and sand bins are to be of reinforced concrete. Division walls and wing walls 6 ft. high around the building are to be of stuccoed terra cotta hollow tile. Although originally planned to be complete and in operation by Sept. 1, because of construction delays the new foundry will not be ready for occupation until Jan. 1.

The site for the new plant was selected both for railroad advantages and for future expansion. The main building will be 560 ft. long and 240 ft. wide, exclusive of a 30-ft. extension at the southern side where concrete bins for storage of core sand will be built. The superstructure of the building will be supported by trusses. The roof will be of the monitor and the ventilation system of the Pond operating type. The pattern shops, millwright department, laboratory, hospital, locker and wash rooms and general offices will be at the west end of the main building, occupying a space 60 x 240 ft. Directly east of this space will be the charging floor. The cupola and coke and pig iron storage areas will cover a section, 60 x 150 ft. which will be 60 ft. high, this height being necessary because of the space required for the overhead coke and storage bunkers and overhead monorail employed to supply the pig



Elevation of New Lycoming Motors Coporation Foundry, to Be Used for Making Automobile Engines. To the left is shown the hood-ventilating arrangement over the core ovens. The four cupolas are indicated in the background



Plan Showing Upper Part of New Lycoming Foundry. Overhead trolleys in the main foundry will reduce the necessity of pouring by hand to a minimum

and scrap iron to the charging floor and core sand to the mixing room and bins. The charging floor will be 18 ft. above the foundry floor level and will extend the full width and length of the area mentioned.

No opportunity has been neglected in the design of the new foundry to designate belt conveyors, electrically operated trucks and overhead trolley systems wherever possible, for the movement of the materials in place of hand operation. Efficient routing of the materials, both raw and semi-finished, will depend on these special conveyances which will be so worked into the general plan of operation that there will be a quick and orderly process working from west to east, that is, from the cupola end on through to the shipping platform at the opposite or east end. Siding facilities for railroad cars will be provided for the unloading of raw materials and the shipping by railroad of the finished engines (so far as foundry work is concerned) to the company's machine shop which will be on the other side of town where the present plant now is located. Three railroad spurs will run along the north side and two of these will be on a 2 per cent grade to allow the moving of cars by gravity. The grade will be long enough for three cars to be thus moved on each track. Another side track will run along the south side of the foundry.

The inside track on the north side will run over a track hopper into which coke will be dumped. A Rexall conveyor belt will carry the coke to belt bucket conveyors which in turn will carry it up and deliver to another Rexall conveyor belt that will distribute it evenly by means of a movable hand-operated tripper into coke bunkers of 600 tons capacity above the charging platform. Eight hopper gates and chutes will be provided in the bottom of the bunkers for delivering the coke on the charging floor directly in front of the cupolas. The coke will be dropped into wooden baskets of 100 lb. capacity for exact measurement of coke which will be emptied by hand into the cupolas.

Pig and scrap iron will be unloaded from cars on the middle north siding (which will run under a big A frame) by means of a 1-ton 52-in. Cutler-Hammer magnet and then conveyed to any one of 25 bins provided for storage purposes on the loading platform by a 5-ton cab-operated Shepard monorail hoist. These bins will have a capacity of 2700 tons, sufficient for a two weeks' supply. Provision will also be made for storing outside in the yard 5000 tons of pig iron and also surplus sand and coke. This extra material will be moved by means of a 30-ton Orton & Steinbrenner locomotive crane with 50-ft. boom which will run around the plant on the north, east and south sides.

The pig and scrap iron will be taken from the bins on the charging floor to conveniently located scales where the charges will be weighed and then hauled to the cupolas by electric elevating platform trucks. The iron will be thrown in by hand in order to get as even a charge as possible. Mechanically operated charges have been considered, but the Lycoming Motors Corporation has found that for the type of high grade gray-iron castings required in automobile-motor construction better results can be obtained by hand charging.

As already noted there will be four cupolas with provisions for two additional units. Two of these will be 96 in. in diameter and two 84 in. Their overall height will be 68 ft. The cupolas will be of the continuous melting Whiting type with a special windbox and tuyere arrangement which will obviate the clogging of the tuyeres with molten iron or slag. They will be equipped with chain hoists for lifting the bottoms into place. Three No. 7 Roots blowers of the positive type (one blower is a reserve unit) each connected to a 50-hp. General Electric motor will be utilized and the reserve blower will be so placed that it may be connected into either line from the other two blowers, each of which serves two cupolas.

Beyond the cupola area (which is 20 x 150 ft.) is to be located the extended molding room which will occupy a space 150 ft. wide (to be subdivided into four molding bays) by 380 ft. long. The height of the molding department to the underside of trusses will be 21½ ft., this height being determined by heights necessary for operation of cranes. Beyond the big molding room will be a space, 100 x 150 ft., to be devoted to the cleaning and welding of castings, sorting, inspection and packing of parts for shipment. Directly outside the cleaning room on both the north and east sides a shipping platform will be provided from which as many as five railroad cars, exclusive of trucks, may be loaded at one time.

An elaborate system of overhead trolleys will

be installed in the main foundry room and so arranged that the molds for the larger castings may be poured on the two huge circular carousel conveying platforms already mentioned or molds for the smaller castings poured out on the floor beyond. Hand pouring thus will be reduced to a minimum. The trolley system will be equipped with a turntable arrangement consisting of four turntables so grouped as to permit the transverse movement of ladles; by means of this, molten iron can be moved to both sides of the foundry. On the long runs of the monorail lines of which there will be two in each foundry section, there will be crossover sections located to allow full and empty ladles to pass. A separate trolley system will be utilized for pouring the metal into the molds on each carousel conveyor. Eight 2-ton, hand-operated Shepard cranes with electric hoists equipped with controllers specially designed for foundry use will be employed for pouring the smaller molds, which after being made on machines will be set up on the floor and will be moved along the monorail system described above on separate crane rails. The monorails will be so arranged as to over-lap these 2-ton cranes, thus permitting the removal of the ladles from the monorail with the hoist on the cranes and then distributing them over the pouring area as desired. Use will be made of 1500-lb. Whiting ladles.

The Circular Continuous Pouring Tables

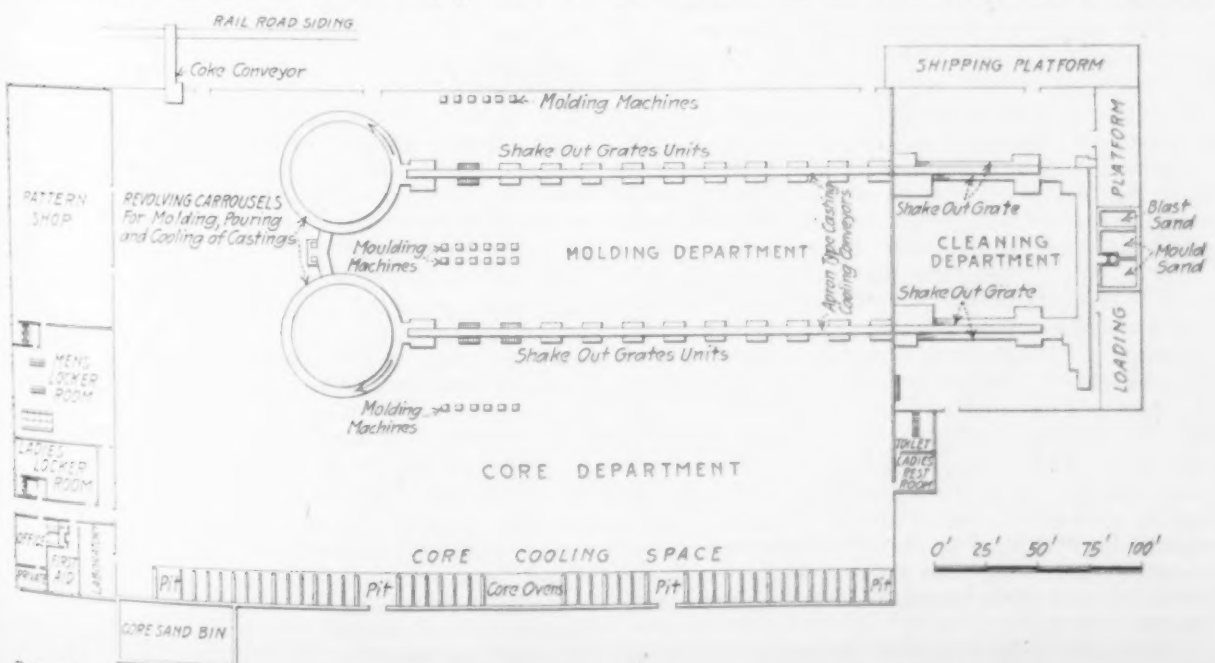
What may be easily classed as the outstanding feature of the new Lycoming Motors foundry will be the two large circular or carousel type conveyors already referred to several times in this article. The outside diameters of these circular conveyors or carousels will be 60 ft. and the platform or table, which will be 5 ft. wide, will be flush with the foundry floor. Each carousel will be driven by a 10-hp. Electro-Dynamic motor through worm gear reducers, which will be connected by belt to the motor. By changing the size of the belt pulleys it will be possible to vary the peripheral speed of the table or carousel from 3½ to 5 ft. per min. Fifty-four minutes will be required for one complete revolution at a peripheral speed of 3½ ft. per min. The tables will be of steel plates supported on a steel channel frame, bent to conform to the diameters of the tables. They will rotate on steel rails mounted on a concrete foundation. The pit for the underconstruction will be 4½ ft. deep. The carousels and all conveyor equipment will be furnished by the Lamson Co., Boston.

These carousels, as already pointed out, will be used to make the larger castings, such as cylinders and crank cases, one carousel to be devoted exclusively to the making of each type. The north or outside carousel will thus be used for the crank cases or soft iron castings. The entire molding area, by the way, will be divided into two parts, one to be devoted to the making of soft castings and the other, or south half, to hard castings.

The molding machines for the making of crank cases and cylinders will be placed along the outside of the carousels. Molds will be placed on the carousel tables and cores will be set in place and molds made ready for pouring as they move around to the pouring station. The monorails will be so arranged that pouring will have to be done at a definitely predetermined point and if the mold passes beyond this point it cannot be poured until it is conveyed completely around again. After the molds are poured, sufficient time (about 20 min.) will be taken to complete the revolution for cooling. When the castings reach a point just ahead of the molding machines, cranes will be used to remove the castings, shake out the flasks over grates and place the castings on the apron conveyors on which they will be taken on down the foundry for subsequent working. The flasks in turn will be returned to the carousel which will take them around to the molding machines. The space inside the carousels will be used for storing cores and flasks.

Next to the carousels the two Lamson apron type conveyors which will extend from the carousels 295 ft. down either side of the main foundry room and on into the cleaning room deserve particular mention. Soft castings will go down one of these conveyors and hard castings down the other. Each conveyor will be 4 ft. wide and move at a speed of 4 ft. per min. Each will be operated by a 5-hp. electro-dynamic motor in the cleaning room.

Underneath each conveyor in a pit 8 ft. 3 in. deep will be Rexall Sahara conveyor belts which will return the sand to the cleaning room end where it will be raised to an overhead screen from which it will drop into a 200-ton storage bin. This screening will cover all the revivifying done to the used



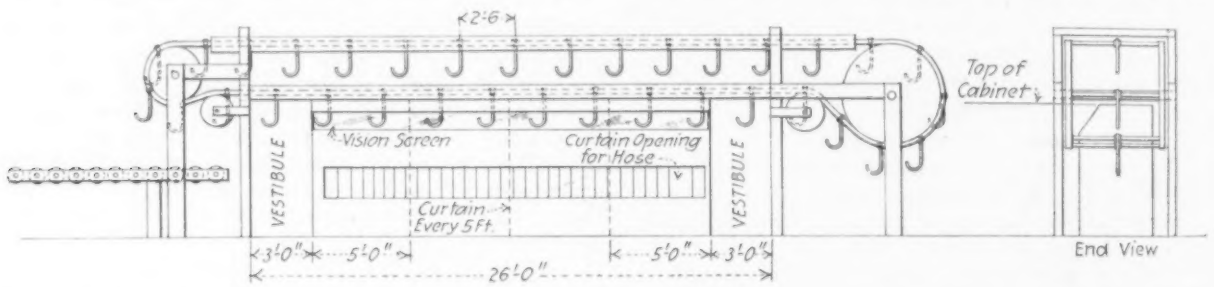
Ground Floor Plan of New Lycoming Foundry. This foundry will be distinctive for its conveyors, the two carousels 60 ft. in diameter and the long apron-type conveyors standing out especially as important foundry innovations

sand. After allowing sufficient time for cooling the sand will be returned by overhead belt conveyors going along the center and north and south walls to hoppers over the molding machines. These conveyors will be provided with the necessary deflectors, reshaping plows and automatic tripping devices for the hoppers. The storage bins will be replenished by sand conveyed by wheelbarrow from three large storage bins, each of 400 tons capacity, located just beyond the cleaning room.

The molding machines for the smaller castings such as pistons, cylinder heads, fly wheels, exhaust manifolds, bearing caps, etc., will be placed along the north wall, along the center columns and also along the columns separating the core room and molding room. These molds will be set and poured on the floor and the flasks later shaken out over grates that will be placed over the sand conveying belts already mentioned.

Conveyor Type Sandblast Cabinet

When the idea for the special conveyor type sandblast cabinet for sandblasting the heavy cylinders and crank cases as worked out by Messrs. McCormick and Bender was first submitted to various sandblast manufacturers, it was declared to be impractical, but later, after further development and clarification, it was conceded to be one of the most efficient schemes for the sandblasting of castings ever devised. Two of these cabinets 35 ft. long by 4 ft. wide by 6 ft. 6 in. high are now being made by the Mott Sand Blast Mfg. Co., Brooklyn.



Conveyor Type of Sand-Blast Cabinet for Cleaning Cylinders and Crankcases. Operators work nozzles from outside through curtained openings

The cylinders and crank cases, after being delivered into the cleaning room by the apron conveyors, will first be roughly cleaned by hand over grates adjacent to the apron conveyors. The castings will then be picked up by hooks attached to a sort of endless ladder chain which will convey the castings through each cabinet at the rate of 4 ft. per min. and which will be operated by a 5 hp. motor. An operator will easily be able to push a casting over to a hook and steer the hook into a hole or corner of a casting. Both ends of each cabinet where the castings enter and leave will be provided with swinging doors and curtains to prevent the escape of dust. Four operators will work from the outside of the cabinet and direct their sandblast nozzles through curtained openings in the side. Each operator will work upon a certain definite part of each casting to facilitate production. One of the cabinets will be used for the sandblasting of crank case castings and the other for cylinders. The used sandblast sand will be automatically removed by screw and bucket conveyors and after being screened will be used again. An exhauster and dust arrestor, also to be furnished by the Mott company, will be used to remove the dust from these two cabinets; these will also serve other cleaning equipment in the cleaning room.

Additional cleaning-room apparatus will include two Mott sandblast tables 8 ft. in diameter, two Mott sandblast barrels 50 in. in diameter and 48 in. long, a number of Whiting tumblers 42 in. in diameter and 72 in. long and a number of double-head grinders. This equipment will be conveniently arranged so that little manual handling will be necessary. After the cleaning, the castings will be placed on a roller type gravity operated conveyor which will take the castings to inspection benches, then again by conveyors to various other operations and finally to the shipping platform.

After leaving the sandblast cabinets the cylinders and crank cases will be placed on gravity operated conveyors which will take them to operators who will do the necessary chipping and grinding. The cylinders and cylinder heads will then be taken to the testing department where each casting will be given a water test. In case of leaks developing the defective castings will be conveyed to the welding department where they will first be placed in a preheating furnace through which they will be mechanically handled and then taken to the welders' bench. After welding they will be mechanically delivered to a reheating furnace to remove strains and hard spots and then to a cooling furnace. The water test will be finally repeated and if any castings are still defective will be sent back for retreatment and welding in the manner described above.

The pattern shop will be 60 x 80 ft. and located at the west end of the main building. Both woodworking and metal-working machinery for making the necessary pattern equipment will be installed in this department.

Core-making Department

Core sand will be unloaded from cars with a 1½-yard electrically operated Hayward grab bucket and conveyed on monorails to a three-section V-shaped, 300-ton core-sand bunker located above the core-sand mixing platform and equipped with eight under-cut gates which will deliver sand to dish-shaped overhead mixing or measuring trucks to be built by the Lycoming Motors Corporation, which in turn will deliver sand to mixers built on piers. Bins for surplus core sand with a capacity of 1000 tons will be outside the main building on the southern side. Sand of different compositions will be contained in each section of the core-sand bunker and by means of the overhead trucks various mixtures of sand will be made. There will be three core-sand mixing machines, one of which will be a spare unit. The mixing machines will empty into hand-push trucks which will run out on tracks directly over the core-making benches and machines, which will be in a room 380 x 60 ft. to extend along the entire south side of the molding room. Walkways for operators pushing the core-sand trucks will be provided up in between the trusses. The tracks will go the full length (380 ft.) of the core making department. Chutes will be provided for conveying the core sand directly to benches and

machines. Provision will be made in the cleaning room for collecting the used core sand by a conveying system and delivering it to a bin outside the cleaning room where it will be screened and a large percentage of it reclaimed and used again.

The core oil which will be used in the core sand will be stored in two underground tanks with capacities of 10,500 gal. each, to be placed directly under the core-sand mixing platform. The oil will be delivered to the mixers by means of a hand operated measuring pump which will be conveniently located near the mixers. The mixers will be of 1-ton capacity and made by the Standard Sand & Machine Co., Cleveland, Ohio. The tanks and measuring pump will be supplied by S. F. Bowser & Co., Ft. Wayne, Ind. Steam coils will be provided inside the tanks for warming the oil. The oil will be run off by gravity from tank cars.

After the cores have been made they will be placed in racks 5 ft. long by 4½ ft. wide by 6 ft. high provided with shelves. When filled with cores these racks will be picked up with electric elevating platform trucks and taken into the core ovens, a battery of 38 of which will be directly south and next to the core-making room. Special overhead hood construction with nine 48-in. Swartwout ventilators will adequately remove all smoke and fumes from the ovens and cores after they have been removed, the Lycoming people declare, so that a wall separating core-making and core-oven rooms will not be necessary.

After baking the racks will be removed a short distance in front of the ovens where they will cool, and smoke and fumes be removed by the ventilating system described above. After being cooled the cores will be returned to the core room for assembling, blacking and filing, where necessary. The heavy cores for cylinder and crank cases will be conveyed by overhead trolley hoists to the molding floor in the same racks in which they were baked, the racks being provided with eye-bolts for the hoist hooks. The smaller cores will be conveyed to the molding room on hand trucks.

The core ovens which will be of the Coleman type will be built by the Foundry Equipment Co., Cleveland. The 38 ovens will be arranged in four batteries, two batteries of 13 ovens and two batteries of six ovens each. Each oven will be 7 ft. high and will accommodate two racks. There will be four firing boxes on each battery of 13 ovens and two firing boxes for each battery of six ovens. Coke screenings from the cupolas will be used to fire the ovens. Each oven will be provided with sliding lift steel plate doors.

Separate Powerhouse

The powerhouse will be separate from the main building, in a steel, glass and concrete inclosure 40 x 100 ft. in size. In this building will be two 250-hp. Keeler boilers, two 1500-ft. Worthington twin air compressors operated by two 300-hp. General Electric motors. Transformer equipment will also be in this building. Arrangements will be made to unload fuel by gravity and exhaust ashes by steam pressure through a pipe out on to a dumping area to the rear of the powerhouse.

The foundry will be heated by means of the unit system of foundry heating and heaters of either the Baetz or Ilg type will be employed. Showers and individual vitreous washbowls will be provided.

New Youngstown Policy as to Mill Operations

YOUNGSTOWN, OHIO, Oct. 19.—That a number of leading district independent makers will adjust their operating schedules hereafter to conform to car supply, instead of stocking their output, is evidence of at least a temporary change in policy. Heretofore it has been the aim to maintain production whether the output was shipped or not and to allow the unshipped tonnage to accumulate. This resulted in a heavy backlog, which reached in excess of 300,000 tons at one time, clogged shipping wharves and warehouses and tied up a large amount of capital. In the past two months, however, this stocked tonnage has been largely removed, the current hangover aggregating only 50,000 tons, which was somewhat augmented during the week by lag in transportation due to coal priorities promulgated by the Interstate Commerce Commission. Some manufacturers feel that unnecessary restrictions on car supply have been imposed by the commission, just at a time when rail movement was righting itself and reverting to normal. While announced operating schedules for this week have not been appreciably affected, there is a noticeable tendency to keep production within the car-supply limit.

Youngstown makers joined with Pittsburgh manufacturing interests in voicing emphatic protest against strict enforcement of the order requiring that all open-top cars with sides 38-in. high and over must be sent in direction of the coal mines, whether loaded or not, and the revocation of special permits. Representatives of the steel industries asked that the ruling be modified to allow the mills to ship their output in gondola cars up to 42-in. inside height.

This situation has precipitated another temporary shortage which manufacturers have been quick to feel, with the result that one large interest was forced for several days to stock 1000 tons daily. With the end of the lake coal movement, expected in from five to six weeks, a large number of cars, estimated at from 4000 to 5000 will be released for lower lake service.

In view of the high rate of output which has been maintained, any curtailment in car supply is immediately felt. Motor truck movement, too, has diminished as rail transportation has approached normal.

Early Effect Expected

UNIONTOWN, PA., Oct. 19.—Observers in the Connellsville region are watching closely developments in the English mine strike situation, inasmuch as they believe it will have an immediate and direct bearing on the American fuel situation if the English walkout is complete. Export demand has maintained coal prices for many months, and while few export shipments are going from this region now because of the scarcity of permits, a probable change in this situation is seen if the English strike assumes a critical phase.

Railroads entered the market during the week, buying large quantities of coal, which is being stored, it is reported. Some observers are of the opinion that export permits will be much more liberal within the next few days, probably during the week.

British Iron and Steel Output in September

LONDON, ENGLAND, Oct. 20. (*By Cable*)

Production of pig iron in Great Britain in September amounted to 741,000 gross tons and that of steel was 883,900 tons, compared with 752,400 tons of pig iron and 709,200 tons of steel in August and with 750,400 tons of pig iron and 800,000 tons of steel in July. The September pig iron output compares with an average of about 690,000 tons per month for the first six months of this year and with the monthly average for 1919 of 617,000 tons. The September steel output compares with an average of 821,000 for the first six months of this year and with the monthly average for 1919 of 658,000 tons. The September steel production was the largest for any month this year.

Contract for Ballantyne Pier Awarded

SEATTLE, WASH., Oct. 12.—The Northern Construction Co., of Vancouver, has been awarded a contract by the Harbor Commission of Vancouver, for the building of what will be known as the Ballantyne pier in that city, which will be by far the largest pier at any of the ports in Canada. The pier will have the most modern construction, and will be equipped with the latest type of cargo handling equipment. The superstructure will rest on reinforced concrete cylinders in a sand and gravel fill, on a solid foundation. The pier will be 1200 ft. in length, 340 ft. wide, and there will be a shore quay 936 ft. long by 350 ft. The pier and superstructure will be of fire proof steel and concrete construction throughout, and will be of a substantial type. The outer berths will be dredged to a minimum of 45 ft. below ordinary low water. There will be three sheds, each 500 ft. long, and one 400 ft. long, two stories each, equipped with adequate electric elevators and cargo handling appliances. Each shed will be 100 ft. wide. In the center of the pier, between the sheds, will be a roadway for vehicles and three railroad tracks, and on the outer sides will be two railroad tracks. Large electric traveling cranes will be installed on the outer sides. The total cost of the pier is now estimated at about $6,000,000, and it will require two years or more to build. It is stated that before this pier is finished, work will be started on a duplicate pier. Close to 6000 tons of structural steel will be used in building the pier, and there will also be several thousand tons or more of other forms of steel used. No contracts for any part of the construction have yet been placed, but a large Eastern structural mill has been asked by its Seattle representative to reserve 6000 tons of shapes for the pier for delivery next year.

Negotiations are under way for the building by the Canadian Government of what will be known as the Esquimault dry dock at Victoria, B. C. The estimated cost of this dock is $6,000,000 to $8,000,000, and some definite announcement about its building is expected to come out in a short time. Several Seattle representatives of Eastern steel companies are in Victoria this week, getting what information they can about the building of this new dock, and also to get a line on what steel will be used in case the dock is built.

J. Coughlan & Sons, Ltd., Vancouver, B. C., are figuring on the building of a new dry dock at Vancouver, but no details about it are available. It is said the company is to receive a large subsidy for 35 years from the Canadian Government, in case it decides to go ahead. The company operates two plants at Vancouver for the building of steel ships, these plants being known as Nos. 1 and 2, and each has a capacity for building 16, 8100 d.w. tons of shipping per year. During the war, the company built for the English Government nine, 8100 d.w. steel ships, and four, 8100 d.w. steel ships for the Canadian Government.

Purchasing Agents to Eliminate Middle Men

With the idea of eliminating middlemen who take a profit without giving returns, the National Association of Purchasing Agents at its fifth annual convention at Chicago, Oct. 11 to 13, inclusive, took preliminary steps towards the formation of seven commodity committees which will study basic raw materials. The committees will meet periodically and assemble reliable data on production and consumption, thereby forestalling as far as possible market manipulation through the dissemination of erroneous information as to the relation of supply to demand. The step is taken as a result of lessons learned in the sellers' market which prevailed during and subsequent to the war, when many middlemen came into existence and through their efforts encouraged price advances to a point far beyond what was actually justified by the existing supply and demand. The seven committees are to deal with coal, lumber, textiles, steel, oils, non-ferrous metals, and pig iron and coke. A co-ordinate development will be the segregation of the 3600 purchasing agents who are members of the association, into seven groups which will meet when necessary to advise the corresponding commodity committees. It is hoped through this plan to bring the producer and consumer of raw material more closely together, without, however, eliminating intermediaries performing a real service.

The next annual meeting of the association will be held at Indianapolis in October, 1921. Officers for the coming year include: President, W. L. Chandler, Dodge Sales & Engineering Co., Mishawka, Ind.; first vice-president, A. H. Reinhardt, Poole Brothers, Chicago; second vice-president, T. P. Webster, Montreal, Que.; third vice-president, A. V. Howland, Tileston & Hillingsworth, Boston; fourth vice-president, S. F. Woodbury, Wilamette Iron & Steel Co., Portland, Ore.; fifth vice-president, D. E. Ferguson, H. K. Porter Co., Pittsburgh; treasurer, W. J. Gamble, Vulcan Steam Forging Co., Buffalo; secretary, L. F. Boffey, New York.

Progress on the Safety Code Program

The comprehensive program of safety codes being undertaken by a large number of organizations under the auspices and rules of procedure of the American Engineering Standards Committee has already been noted in these pages. Each code is being formulated by a sectional committee, broadly representative of the interests concerned, and composed primarily of representatives designated by the various bodies interested in the particular code. The sectional committee is organized by one or more bodies designated for the purpose by the American Engineering Standards Committee and known as sponsors. Sponsorships for the additional safety codes have been arranged as follows:

Machine Tools.—National Machine Tool Builders' Association and the National Workmen's Compensation Service Bureau.

Mechanical Transmission of Power.—National Workmen's Compensation Service Bureau, the International Association of Industrial Accident Boards and Commissions, and the American Society of Mechanical Engineers.

Abrasive Wheels.—The Grinding Wheel Manufacturers of the United States and Canada, and the International Association of Industrial Accident Boards and Commissions.

Foundries.—American Foundrymen's Association and the National Founders' Association.

Head and Eye Protection.—Bureau of Standards.

The head and eye protection code has been completed, and the sponsor, the Bureau of Standards, has submitted the code to the main committee for approval.

Easier Conditions in Coal and Coke

UNIONTOWN, PA., Oct. 19.—A decidedly softer tendency was shown during the week in the coal market and to a less degree in the coke market. However, coke quotations in the Connellsville region are continuing around $17 to $17.50 with a lessened demand. So far price reductions in the steel trade generally have not been reflected in this basic fuel here, but it is generally believed that price dropping on pig iron will be followed soon by similar reductions in the price of coke.

The car situation continues to be the crux of the production situation in the region. The Pennsylvania division here had been notified that 1500 extra cars daily had been ordered diverted to this region from the East, but so far this week they have failed to appear in any material numbers. Placements on the Pennsylvania for the week will average approximately 50 per cent. The Monongahela railroad, however, is placing 100 per cent coke and 87 per cent coal cars.

The labor supply is equal to the car supply at present and observers believe this situation will continue until spring. Despite the fact that it is reported that 3000 aliens are reaching Eastern ports daily, few of these immigrants have made their appearance in the coal fields. Foreign bankers here say they are filtering into the Eastern textile and farming regions and these observers believe the influx of alien workmen in the coal and coke region will not be felt until spring—probably March or April.

BALTIMORE PLANT ADDITION

Chesapeake Iron Works Increases Capacity by Plant Expansion and Labor Performance

Recently the Chesapeake Iron Works of Baltimore, Md., builder of steel structures, bridges and electric traveling cranes, increased the capacity of its structural steel department 100 per cent by the addition of a new building of steel and concrete construction 210 x 60 ft. in size. With this addition the plant of the Chesapeake Iron Works at Westport, Baltimore, covers about 4 acres. Operating throughout the new building's entire length is a Chesapeake electric traveling crane of 20 tons capacity and 58-ft. span. There are also two 1-ton 20-ft.-span Chesapeake gantry cranes which will be utilized to handle "bull riveters."

The building will also be equipped with other latest type material-handling devices, including a number of electric hoists, pneumatic riveters, portable electric and air drills, etc., for smaller operations. The addition of the new building and equipment to the Chesapeake plant will give it a capacity of about 1000 tons output per month, or 12,000 tons per year, and the works will give employment to about 300 men.

In conjunction with this expansion in building and machine equipment, F. S. Chavannes, president of the company, has launched a campaign to reduce costs and increase the efficiency of his plant. Already excellent results are being attained, he asserts, and on some operations a reduction of labor costs of one-fourth to one-third has been effected, without in the least cutting down the quality of output, but rather, he adds, the standard of output has been increased.

In this reorganization campaign emphasis is also being placed on the addition of new special machines that will thoroughly modernize the plant and enable labor to get a maximum output without undue strain. In one case, for instance, it was found that to finish a certain piece of work 1143 hr. of labor were required. Under a new method of operation employed as a result of the investigation, and after an appliance was installed, similar work was turned out in 734 hr., a saving on one job of 409 hr., or over 33 per cent in labor costs. With more experience on this particular job it is expected the cut in labor costs will amount to as much as 50 per cent over the former method used.

The company is now working out a scheme by which it intends to divide with the employees on a particular job the difference in labor costs saved over the original estimate of the work. If it is estimated that 1000 hr. are required to do a certain piece of work, for example, and the men turn it out in 500 hr., those on the job will receive their proportion of the saving in labor costs.

Plans of Electric Alloy Steel Co.

Louis J. Campbell, president of the Electric Alloy Steel Co., Youngstown, Ohio, states that construction of the proposed Niles, Ohio, plant of the company will be deferred until next year. The company has acquired a site at Niles for its property. Meanwhile its Charleroi, Pa., plant is being improved and its capacity enlarged. A second electric furnace is being added which will increase the daily capacity from 20 to 40 tons. A heat treating and annealing plant, scrap, billet and ingot yard and additional railroad connections are among the improvements being carried out at an approximate cost of $300,000. Barton R. Shover, Pittsburgh, is consulting engineer on this project. The Charleroi plant produces fine tool steel, ball bearing steel and the like, while present plans contemplate that the Niles works will produce steel for automobile springs.

Absorbed by Hercules Mfg. Co.

The Hercules Mfg. Co., recently organized in Indianapolis with a capital of $400,000, has acquired the entire business of the Hercules Electric Co., manufacturer of Wizard magnetos.

The Hercules Mfg. Co. is headed by B. Perry Remy, Frank I. Remy, Charles G. McCutchen and C. D. Meier. The Remy brothers have had years of experience in the design and manufacture of magnetos. Mr. McCutchen is an experienced manufacturer and Mr. Meier has for years been with the Hercules Electric Co.

The first efforts of the new company are being devoted to improving Wizard magnetos, but the engineering department is already at work in the development of new ideas for reliable ignition on small stationary farm and marine engines.

The Bearings Co. of America, Lancaster, Pa., thrust ball bearings and ball retainers, has increased production capacity by about 75 per cent with the completion of a new concrete and steel building.

New Building 60 x 200 Ft. in Size with New Equipment Will Increase Output of Structural Steel Department, Chesapeake Iron Works, 100 Per Cent

Community Spirit in Small Industrial Town

Development of One-Big-Family Idea Among Employees by Moving to Village — Black & Decker Plant Surrounded by Workers' Residences — Stock-sharing Plan

BY EDWIN A. HUNGER

WHERE and how to get steady, conscientious and contented workpeople is an ever present industrial problem. Numerous are the plans promulgated to solve it. One of these plans is to take the factory, plant it out in open country, so to speak, and let a working community, its working community, in fact, grow around it. That is how the great shoe-making center was established near Binghamton, N. Y., by Endicott Johnson & Co. and that also is the plan followed by the Black & Decker Mfg. Co., maker of portable electric drills, automobile air compressors and valve grinders and subject of this article.

Fifteen miles out from Baltimore, Md., is a pleasant little country village called Towson Heights and on the edge of this village is a tract of 166 acres that contains the Black & Decker plant and a number of well built residences owned by Black & Decker employees. Even though the complete roll of workpeople numbers only 350, the Black & Decker company looms big in the eyes of the village inhabitants, for it is the one manufacturing concern therein; all its employees live in the village or nearby; it is in truth one of the biggest things in Towson Heights. When people in Towson Heights, therefore, want to work, they think right off of the Black & Decker establishment and once connected therewith wanderlust does not frequently figure in their desires. Home and family ties coupled with employment in a concern that is on the *qui vive* to provide itself with numerous industrial-relations helps (if we may call them such) go much to keep the labor turnover down to a minimum.

There is, in fact, only one notable labor difficulty met by the Black & Decker Mfg. Co. and that occurs several weeks in the spring and again in the fall when many of the employees take time off to spell their folks in the arduous duties of ploughing and planting and later in harvesting. But knowing in advance, as they do, that a certain large percentage of their help will be missing during these periods, it is easy enough for the employment heads to plan in advance and readjust the factory routine accordingly.

Prior to coming to Towson Heights in 1917, the Black & Decker plant was in Baltimore where, of course, the company had to compete with all sorts of manufacturing concerns for help; and those workers it finally did get were often foreigners and others without home ties or close family affiliations. In Towson Heights on the other hand, the employees are all Americans, many of them of families that for generations back have been domiciled in the environs of Towson Heights. Trouble from radical agitators and sympathizers within the ranks as well as outside is unknown. People of the wholesome type born in and about a thoroughly American village such as Towson Heights have no time for the nonsense that the syndicalists and Bolshevists are continually handing out.

Naturally men and women of the mold now in the employ of the Black & Decker company since it moved to Towson Heights are keen for the community idea; in fact, it was theirs long before the company came to Towson Heights and it is the latter really that is cashing in on that idea. As a result the big family idea has been made dominant and always an effort is put forth to include the villagers in this family. Thus, for instance, residents of Towson Heights are permitted to a certain extent to partake in the company's home-building and stock-sharing activities and are always included in its social programs.

To further the democratic spirit that naturally follows the community idea, private offices for the heads of the company have been eliminated. The office building, which, by the way, during the war was a portable Y. M. C. A. hut, is a one-room inclosure and the desks of the president and vice-president are located out in the open among the twenty-five or more office employees.

There is nothing like a central eating place to promote the get-together spirit and so a cafeteria has been established. In spite of the fact that the majority of the employees live close by, this cafeteria is crowded each noon and a noisy session (with lots of music) is always in order. Of course, at this time all the officials make a special effort to be on hand and mingle in the conversations and impromptu jollifications.

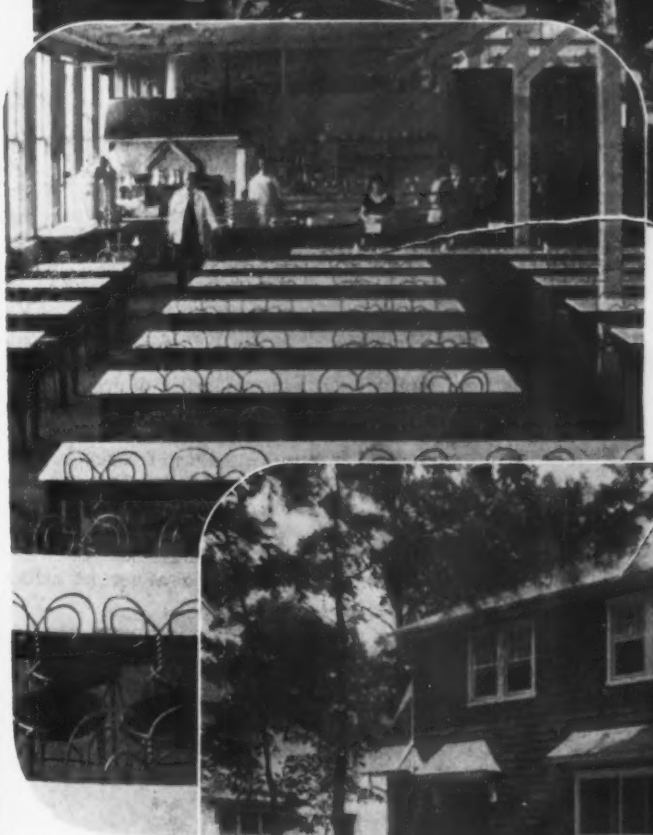
Mention has already been made of the housing scheme. Some thirty modern residences have been built on the 166-acre plot on which the plant itself is located and the building of others is contemplated. For the management of construction a building and loan association has been formed which is subscribed to not only by employees, but many Towson Heights people as well. All building is superintended by a company official and purchases for all building materials are made through the company's purchasing department.

Recently a plan for distributing a block of $250,000 preferred 8 per cent cumulative stock to the employees on long payments was announced. Residents of Towson Heights will also be included in this plan to a limited extent. Thus again the idea of the community or one big partnership is again put to the front. Another block of stock will be sold later, the plan being to issue new stock to the value of $1,000,000 within the next year. The first block carries with it a 25 per cent bonus of common stock, one share to be given with four shares of preferred stock. In other words, the par value of the new preferred stock will be $25 (redeemable at $27) and for each four shares, or $100 worth purchased, one share of common stock, also having a par value of $25, will be given. The following statement published by the compang regarding this stock-sharing plan is self-explanatory:

> In line with our policy of encouraging the interest of every member of our organization in the work of all and the business in general, and in order to provide an equitable means of sharing the profits of the company with the deserving of our employees, we are going to arrange to make it easy for them to become stockholders. First, we will

Group of Attractive Two-Family Houses Occupied by Black & Decker Employees. Thirty houses have already been built on the 166-acre plot on which the plant is also located

Interior of Main Manufacturing Building, Where Black & Decker Products Are Machined and Assembled, Showing Clean, Well-Lighted Working Area



Cafeteria Where Noon-Day Crowds Assemble for Lunch in Spite of Close Proximity of Homes

Within a Stone's Throw from the Manufacturing Plant, This Splendid Six-Room Cottage Is for One of the Employees

Another Group of Employee Homes. For the management of construction of these homes a building and loan association has been formed

accept as large a cash subscription as each one can arrange to pay for within 30 days, in sums, however, of not less than $100 and multiples thereof. Second, in addition to the cash subscription, we will allow time to pay for a further subscription. The amount of time allowed will depend on the length of service of each employee, and will be worked out on the basis of allowing one year's time for every year of service with the company up to a total of two years, after which six months will be allowed for each additional year of service. However, everyone will be given a minimum of one year, even if they have been with us only one week, and no one will be allowed more than five years as a maximum time.

The next block of preferred stock to be issued by the company will not carry as large a percentage of common stock as a bonus as the first block, probably only 20 per cent, or one share of common stock for every five shares of preferred, and the third block a still lower percentage, perhaps 16⅔ per cent.

For this reason we want all of our employees to get in on the first block, or most favorable basis, and get in as heavily as they can afford. Consequently we are allowing the time for payment.

The plant takes up 400,000 sq. ft. of floor space. The main building, which is 100 x 200 ft. in size, is of all steel daylight construction. Since all machines are electrically operated there is an absence of smoke and dirt and, therefore, the fact that the plant is in the midst of the Black & Decker housing area does not mar the community idea with homes within such a close radius as it might were the conditions otherwise.

As an indication of the company's growth the following figures of its business for the past five years are interesting: 1915, $87,398.72; 1916, $197,831.63; 1917, $231,537.18; 1918, $513,505.98; 1919, $1,105,710.16; six months, 1920, $1,028,935.99. That the development of the one-big-family spirit made especially successful by moving the factory to Towson Heights helped to bring about the increases named may readily be assumed.

Developments in Electro-Percussive Welding

Quantity Production of Duplicate Parts—Dissimilar Metals Joined and Cutting Tools Attached to Low Grade Shanks

RECENT developments in electro-percussive welding were discussed by Douglas F. Miner, research engineer Westinghouse Electric & Mfg. Co., East Pittsburgh, in a paper presented at a recent meeting of the Pittsburgh section of the American Welding Society. "Electro-percussive welding," Mr. Miner said, "is a process which is primarily intended for manufacturing applications, where large quantities of duplicate parts are

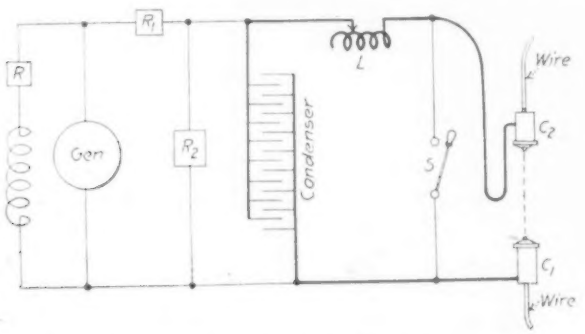


Fig. 1—Circuit Diagram of Condenser Type Welder

to be produced. One size of machine will handle a large variety of pieces over quite a range of size, but it will be appreciated that more or less special holding fixtures must be designed to attach to a given machine. If only a small number of parts of each particular design and size is to be made, the necessary investment in fixtures may be excessive. Thus it will be apparent that repair work is not the most suitable field.

"There is unlimited opportunity for development of automatic machines utilizing this process. Inasmuch as the time of welding is negligible, the only limitation of speed of production is speed of feeding and gripping the pieces. This permits a heretofore impossible output. Furthermore, unskilled labor can be used."

In discussing the type of applications determined to be suitable, the speaker said that a study of parts entering into the construction of a prominent make of automobile, showed over 50 important parts where percussive welding would demonstrate a decided advantage over present methods; manufacturing costs of many types of tools using a special cutting portion attached to a cheaper grade shank would be reduced and better results obtained, and in the manufacture of hardware many items, especially those involving union of unlike metals or unequal sections offered interesting possibilities.

"The underlying principles utilized in percussive welding," Mr. Miner said, "were discovered in 1905 by L. W. Chubb, of the Westinghouse company. Following his original experiments Mr. Chubb developed machines for welding metals in wire form of rather small cross-section. With this equipment very satisfactory welds were made between wires of various metals. Widely different physical properties of wires to be welded offered no obstacle and perfectly ductile welds were made with platinum and lead, tungsten and aluminum, copper and aluminum.

"The apparatus consists essentially of a device for producing a percussive engagement of parts to be welded, practically simultaneous with a discharge of electrical energy. In the wire welders the energy is taken from an electrolytic condenser. Sets of aluminum plates immersed in an electrolyte of borax solution are charged by a direct current of very small value, and discharged at the moment of weld. This discharge takes place at the parts to be joined and melts them with an explosive violence. At this moment the hammer forges the parts together into a perfect union.

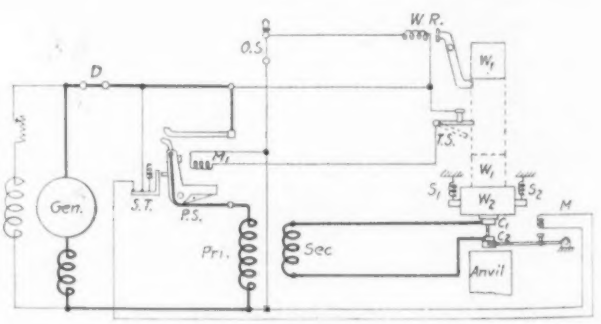


Fig. 2—Circuit Diagram of Electromagnetic Type Welder

Fusing and union of the metals is finished in approximately 0.005 second. Fig. 1 shows a circuit diagram of this process.

"Using an electrolytic condenser for source of fusing energy proved to have decided limitations because of limited amount of energy capable of being stored in a condenser of convenient size. Consequently, Mr. Chubb evolved a scheme for utilizing electrical energy stored in a magnetic field, thus substituting electro-magnetic energy for electro-static. Since about a year ago we have been experimenting and developing apparatus along this line, and have been very successful in welds of the butt type up to a cross-sectional area equivalent to ½ in. diameter stock. Future work will extend this to much larger sections.

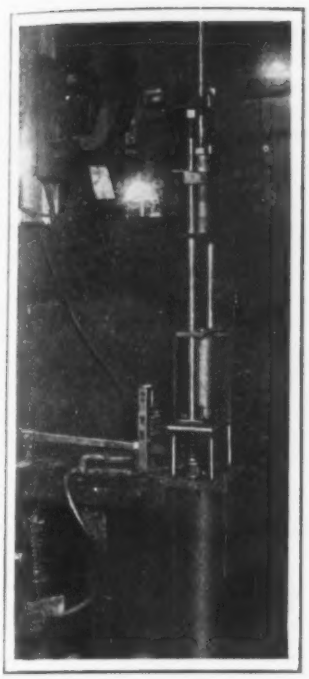


Fig. 3.—Electromagnetic Type Welder

"To give a better understanding of the process, we may briefly describe the operation of an experimental outfit we have been using. Fig. 2 is a diagram of electrical circuits and Fig. 3 gives an idea of the appearance of apparatus.

"Stated in simple terms, when any electrical circuit containing large inductance, such as when a coil of many turns is interrupted, the stored energy of course tries to prevent the break and causes an arc to be drawn. An electric arc is a source of high intensity heat particularly well suited to welding operations. In an apparatus we have a reactance coil of two windings, one (primary) being connected momentarily to a source of direct current and the other (secondary) being connected to the pieces to be welded. By means of suitable tripping devices the forging hammer causes the primary coil to be disconnected from the source of power, with the secondary closed. Transfer of energy of the collapsing magnetic field to the secondary occurs and then a rapid small separation of the parts to be welded causes an intense arc to melt the surfaces. At the proper moment the hammer forges the pieces together. The complete operation occupies about 0.1 second of time, giving no time for oxidation or excessive heating. The time sequence of events shown in an oscillogram taken during a weld between ⅜ in. copper and steel rod indicates a peak of current of 2600 amp., an arc voltage of 30, maximum power 60 kw., energy 0.00077 kw.-hr., and time 0.094 seconds.

"Figs. 4, 5 and 6 show with an enlargement of 100 diameters, the character of a percussive weld between copper and cold rolled steel. In Fig. 4 the steel has been etched, but the copper left unetched. The reverse is the case in Fig. 5, while in Fig. 6 both metals were etched.

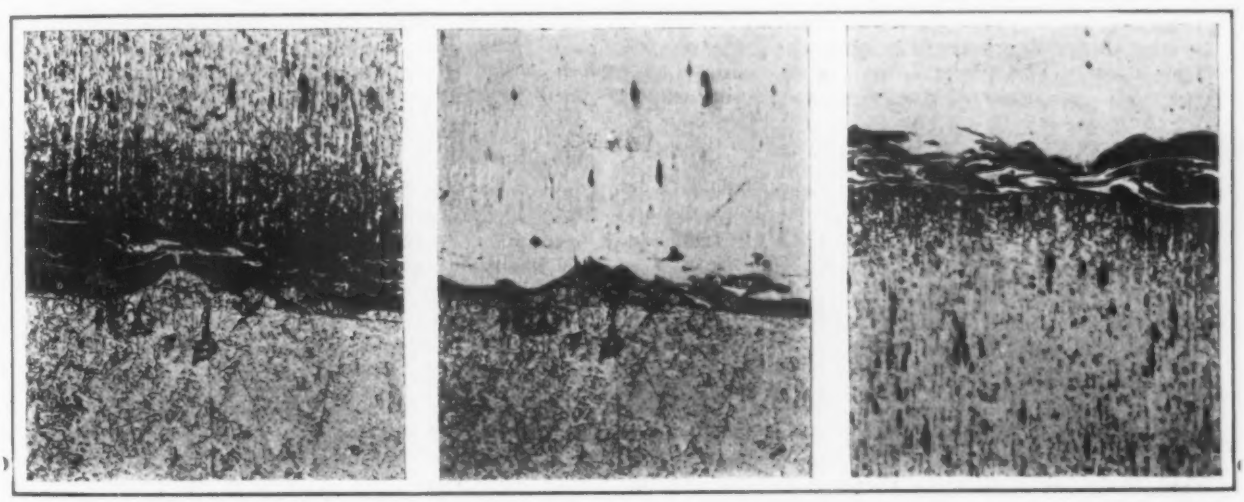
"Passing from steel toward copper we notice that the first change from the structure of the virgin metal is an increase in pearlitic concentration (the dark spots). After this comes a laminated mass of pasty and melted steel which mingles with a layer of fused copper. Back of this is the unchanged coarse grain of the copper. Little or no amalgamation takes place and the two metals are sharply defined, but interwoven by the force of compression. Interpenetrations are visible and examination at higher power shows small globules of steel in the area of fused copper. No cavities or oxide inclusions have been found which would destroy the strength of the joint if present."

The speaker concluded with a detailed discussion of the advantages of electro-percussive welding. These included power saving, rapidity of welding, welding of unequal sections, welding of unlike metals, welding without changing the physical structure or condition of the parts (due to localized heat), uniformity of weld, and decreased cost of finishing due to the small fin or flash produced.

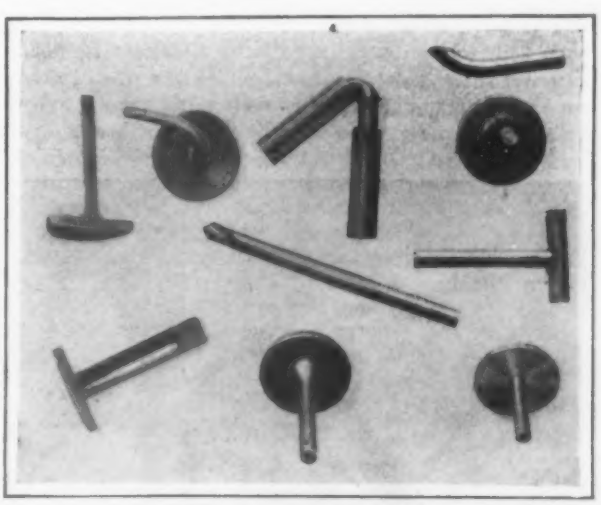
New Westinghouse Foundry

The Westinghouse Electric & Mfg. Co. has completed a new foundry at its South Philadelphia works, 140 x 200 ft., which will be used in making castings weighing from ½ lb. to ½ ton. The company also has completed a three-story warehouse at its South Philadelphia works with floor space of 86,650 sq. ft., two pattern storage buildings 30 x 256 ft. and two garages which will accommodate 60 automobiles.

Pulverized coal, using Fuller apparatus, for melting and drying furnaces, is to be used in the Canton plant of the United Engineering & Foundry Co.

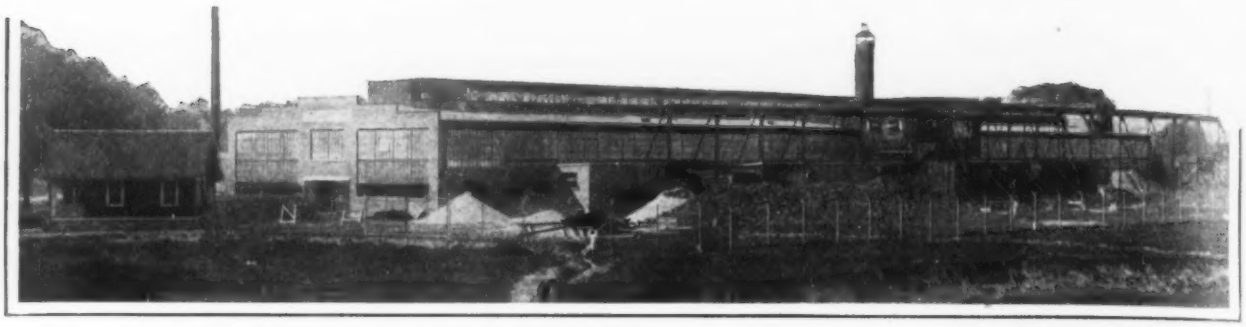


Figs. 4, 5 and 6—Photomicrographs, Enlarged 100 Diameters, Showing the Character of a Percussive Weld Between Copper and Cold Rolled Steel. In Fig. 4 the steel has been etched, but the copper left unetched; the reverse is the case in Fig. 5, while in Fig. 6 both metals were etched



Examples of Electro-Percussive Welding. The illustrations, reading from left to right, show the following: A ¼-in. copper rod welded to a steel disk showing the penetration of the metal and the clean line of the weld; a ¼-in. steel rod welded to a steel disk and tested in bending without failure; weld between two sections of copper 5/16-in. in diameter, bent at a sharp angle so that the copper outside of the weld cracked; short drill lengthened by welding to cold rolled steel; T-weld of cold rolled steel; ½-in. hollow steel rod welded to steel plate; nickel-steel valve head with cold rolled steel stem; cold rolled steel rod welded to disk and finished.

Modern Two-Cupola Foundry at North Tonawanda



Cupola Blower Has Double Use, Including the Removal of Gases and Smoke, in the New Peirce-Brown Plant

THE first heat in the production of small gray iron castings at the foundry at North Tonawanda, N. Y., of the recently organized firm of Peirce-Brown, Inc., was poured on Aug. 13. The plant, notable in a general way for material handling facilities and employee comfort features, is interesting among details in the double use made of the cupola blower. When the cupola is dumped, the blower, by a shifting of gates, is made to draw away the smoke and gases at the cupola and to discharge them into the atmosphere.

The main building is 75 x 400 ft., of steel construction with brick side walls and steel sash. Of particular interest is the blower installation for removing the gas and smoke from the building when the bottom is dropped in the cupola. The blower, which is the Buffalo Forge Co.'s rotary type, is direct connected to the motor and has two intakes. One intake draws the air from outdoors and the other draws the air low down toward the bottom of the cupola. The outlet is also subdivided, one running direct to the cupola to supply the blast and the other leading outdoors. When the blast is on, the gate admitting the air from outdoors is open and the lower one closed, and the discharge pipe leading outdoors closed. After the bottom is dropped, the lower intake is opened and the one from outdoors closed, the pipe to the wind box is closed and the discharge outdoors is open, allowing the fan to suck the air and cinders and discharge them outside of the building.

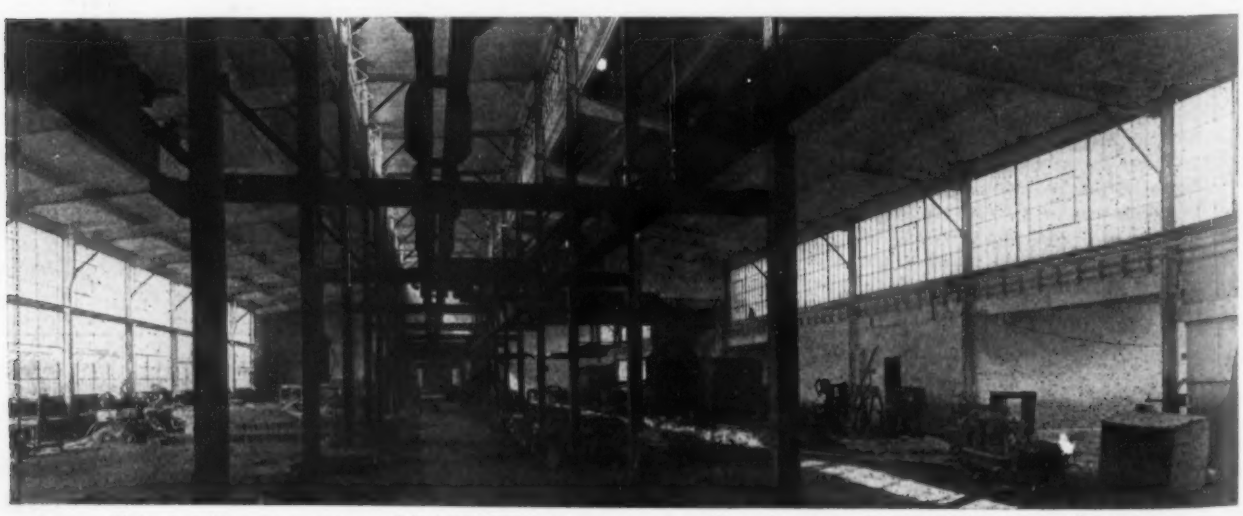
The crane-way over the storage yard is 20 ft. from the building so as to provide leanto's for the sand storage. The crane is equipped with a magnet for loading pig and scrap into skip boxes which are placed directly on the charging floor by Stuebing lift trucks and distributed to the proper storage place on the platform. To conserve handling the charging scale is located on the charging floor.

There is a 54-in. Paxson cupola now installed, but the platform has been framed to provide for the installation of a second cupola. The charging platform is designed to sustain a load of 500 lb. per sq. in., and to make it fireproof is covered with sheet iron and roofed with concrete.

The core room, 40 x 75 ft., is located in the front end of the building toward the small office which is shown in the foreground of the exterior view. Here girls are employed to make the small cores. A girls' wash room is provided equipped with all modern, sanitary fixtures and with steel lockers. The core ovens are on the far side of the building, the stack for these showing over the roof of the office. The core ovens were built by the Foundry Equipment Co., Cleveland.

The main molding floor is 75 x 240 ft. It is equipped with cranes in some of the bays to provide for the heavy floor work, and monorails are installed over the center aisle. The monorail equipment was supplied by the S-T Engineering Co., Buffalo. Osborn molding machines are provided for the small castings and a large roll-over suitable for 200 to 300-lb. castings. At the far end of the molding floor is a large fireproof pattern storage built entirely of brick and cement to provide safekeeping for customers' patterns.

A hollow tile fire wall with fire doors separates the molding floor from the cleaning room. Passing through, directly on the right, is the master mechanic's room. This is equipped with a 500 cu. ft. Ingersoll-Rand air compressor, lathe, drill press, planer and hack saw to provide for repairs and any machine work necessary on patterns. Leading from this room is the transformer room, which is equipped with three 150 k.v.a. trans-



Main Building, 75 x 400 ft. of Peirce-Brown Foundry. A wide center aisle is served by monorail cranes

formers, together with a secondary switchboard which will permit any one of the transformers that may be in trouble being cut out and running the balance on open delta without losing any time making the disconnection. The main switchboard is also in the transformer room. Adjacent to the master mechanic's room is the stock room where all the small requirements for the foundry are stored. This is run on a perpetual inventory card system to enable the stock to be kept up at all times.

The pattern shop is on the right-hand side of the aisle and is equipped with motor driven machine tools for taking care of all the flasks and pattern work.

The cleaning room is 75 x 120 ft. The equipment includes Sly exhaust tumbling mills, direct motor driven grinders and sand blast equipment.

A feature of the molding room is the construction of the floor, which was first filled with broken brick, and then soft coal ashes and the cleanings from the stoves of the Donner steel plant. It was then rolled with a 10-ton steam roller and covered with a few inches of sand, thus providing a hard roadway and good foundation over which to run the sand cutter.

The plant will be heated by four Baetz heaters which it is expected will keep the plant at 70 deg. in zero weather. The interior of the building has been sprayed with cold water paint and is lighted with Mazda lights, thus to provide good illumination at all times.

W. P. Peirce is president and general manager of the Peirce-Brown, Inc., and S. W. Brown is secretary and treasurer.

STORAGE OF BITUMINOUS COAL

Precautions to Be Observed to Avoid Overheating or Spontaneous Combustion

Valuable information on the storage of bituminous coal is given in Bulletin No. 116, published by the Engineering Experiment Station of the University of Illinois, Urbana, Ill. This bulletin aims to supplement Circular No. 6, published by the university, by presenting information secured in a further study to find out the experience of those who stored coal under the unusual conditions during 1918, when the zoning system of distribution under the United States Fuel Administration was in force. Outstanding conclusions from the study follow:

If possible a place should be chosen that is dry and well drained; if not drained naturally, drains should be provided about the storage pile, not underneath it, as a drain beneath a pile may produce an air current up through the pile and thus assist spontaneous combustion.

Coal should not be dumped on ground covered with ashes or refuse of any kind, because often, in addition to furnishing flues for the admission of air, such refuse contains combustible material; if possible, adequate space should be provided so that the coal can be moved if heating occurs.

Kinds of Coal to Store

The spontaneous combustion of coal is due largely to the oxidation of fine coal; consequently, the liability to spontaneous combustion in stored coal is greatly reduced and in many cases eliminated if dust and fine coal can be kept out of the pile. Hence, if possible, cleaned, screened coal of a uniform size should be chosen, the larger the lumps the better, so as to give the greater number of voids in the pile. Coal of one size is better than a mixture of sizes.

Sized coal should not be stored upon a foundation of fine coal. Coal should be handled in such a way as to prevent breakage as much as possible. In storing mine-run coal, it should be piled uniformly so as to prevent segregation of the sizes. As fine coal or slack is more liable to spontaneous combustion than clean sized coal, it should be very carefully watched in storage to detect evidence of heating.

It is wise to select low sulphur coals for storage if obtainable, but it must not be taken for granted that a low sulphur coal will necessarily store well.

Methods of Piling

Relative to the method of piling, the report states that coal should be so piled that air may circulate freely through it and thus carry off any heat generated, or else so closely packed that air cannot enter the pile; that is, under water storage conditions should be approximated as nearly as possible. A number of small piles, if practicable, are better than one large pile. The hazard of spontaneous combustion seems to be independent of whether the coal is piled in the open or under cover, with the precaution, however, that repeated wetting and drying of coal seems to increase the tendency to spontaneous combustion.

In case of fire, water is to be used carefully and only as a last resort after other means, such as moving the coal, have been tried to lower the temperature. Coal that has once heated should preferably be used at once and not be returned to the pile.

About 75 per cent of the coal pile fires studied have occurred within 90 days after the coal was placed in storage; hence particular attention should be given to the pile during the first three months that it is in storage. The greater the area of the pile exposed to the air the more quickly will the danger be passed.

The bulletin analyzes the causes of numerous fires and photographs show unsafe conditions. Various coal storage systems, together with photographs of large coal storage plants and explanations of appliances on the market for reading temperatures in the coal pile are given.

Demand for American Machinery on the Continent

WASHINGTON, Oct. 19.—Consul Ralph C. Busser, at Trieste, has sent a report to the Department of Commerce urging American manufacturers of machinery to organize their export business to compete in the portions of Italy, Jugoslavia and German-Austria tributary to that port.

"It would be advisable," he says, "to study conditions on the spot and to form connections with good local technical or engineering firms which have the facilities for exhibiting, handling and installing American machinery. Ample stocks of machines would thus always be available for the prompt filling of orders and executing of contracts.

"The material chiefly in demand," continues the report, "includes electric apparatus and appliances, water meters, turbines, cranes, steam and oil engines, equipment for shipbuilding, mining and textile machinery. The steam and electric railways are also in great need of equipment and supplies. Jugoslavia, German-Austria, Hungary, and other countries of the hinterland are in need of locomotives and rolling stock on account of the great losses and deterioration in consequence of the war.

"Among the new projects which will create a considerable demand for machinery, is the plan to connect up the hydroelectric plant of the Celina in the Veneto with the Isonzo plant at Monfalcone and the hydroelectric plant of the Recina with the hydroelectric plants of the Celina and the Isonzo. Plants especially in need of new equipment and machinery are textile mills in German-Austria and Jugoslavia; the coal mines of Istria and Dalmatia; the tramways of Trieste, Pola, and Gorizia; and the shipyards of Trieste and Monfalcone."

The property of the Buckeye Engine Co., Salem, Ohio, has been taken over by the E. W. Bliss Co., Brooklyn, N. Y., manufacturer of motor driven presses, and production will be continued. Pending readjustment in factory management, workmen in the various departments have been temporarily laid off.

Electric Chain Riveting Machine

A machine for automatically riveting chain links has been developed by the Kobert Machine Co., Buffalo, N. Y., manufacturer of electric riveting and forging machines. The principal problem that the company had to solve to make the machine a commercial success was to control the heat and not permit any heat saturation below the side plates that would be injurious to the hardened surface of the pins. That this has been accomplished, it is explained, is demonstrated by the uniformity obtained in the finished link.

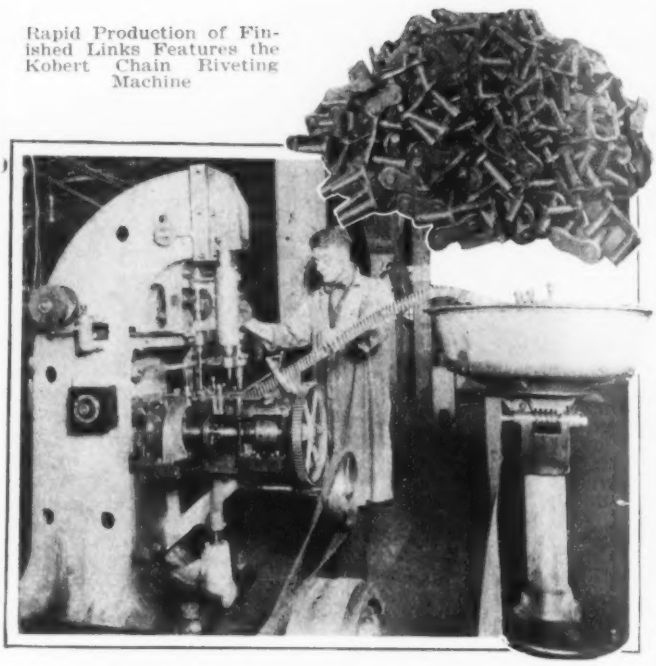
The links are fed from a rotating hopper having a screw or worm rail which is fixed within the hopper. The construction and operation of the hopper is such that the links are always in a tumbling mass at the lowest point of the worm rail which results in a certain number of links affixing themselves to the rail. This continuous feeding of the links rapidly fills the rail until the top is reached when gravity feeds the links directly into the fixture.

The links which pile themselves along the feeding rail on the machine are controlled by a finger permitting only one link at a time to be transferred into the gripping tools which open automatically to receive a single link carried by a horizontal carrier operated by a friction disk. The jaws are then closed by a powerful toggle operated by a cam, the electrode making contact in a manner which permits of no sparking or arcing. As the desired heat is obtained, the electrode is raised and the heading set delivers a heavy blow forcing the metal into any desired shape. The entire cycle of operation including the heating and heading does not consume more than a few seconds, the final varying with the size of the link.

The machine is designed to eliminate damage in case an offsize link becomes caught in the mechanism. This is accomplished by devices provided for the automatic stopping of the heating and heading tools, and the functioning of the feeding until the obstruction has passed through when the riveting heads again are automatically thrown into operation.

Economy of current is emphasized as a feature as the heat is entirely directed to the point of operation and when not actually heating, the machine is not using any current. Symbol or character numbers can be stamped into the heading set so that each finished rivet will show the impression. A single operator can take care of a battery of from three to four machines.

Rapid Production of Finished Links Features the Kobert Chain Riveting Machine



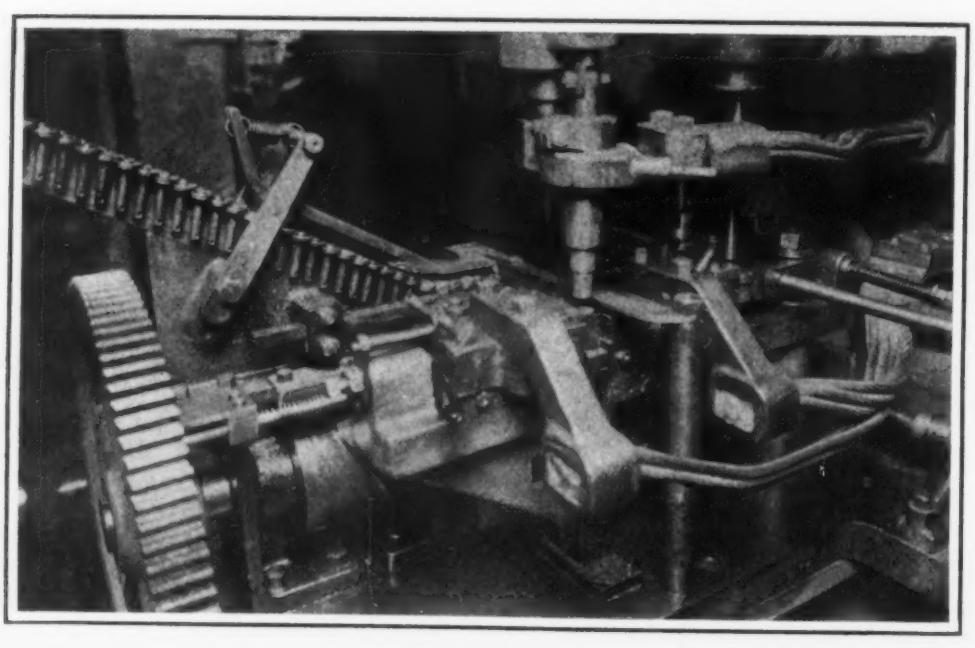
Bench Shear for Tool Room Work

A larger size bench shear than that formerly manufactured by this company is announced by the Bartlett Mfg. Co., 40 East Lafayette Avenue, Detroit. The new shear is known as No. 25 and is of the same style as the company's No. 20 except that the cut of the new shear is 4½ in., whereas the cut of the No. 20 is 3 in. The shear is rated to cut steel bars or sheet iron up to ⅛ in., and is explained as particularly adapted for use in tool room work. The blades are of crucible tool steel and an extra blade for wire cutting can be supplied.

Reversal in Churchward-Bethlehem Suit on Nickel-Chrome-Vanadium Steels

In the case of Churchward International Steel Co. vs. Bethlehem Steel Co., the United States Circuit Court of Appeals for the Third Circuit on appeal from the District Court for the Eastern District of Pennsylvania has decided that the claims of the patents involved in the suit are invalid for want of patentable invention and has directed the trial court to enter an order dismissing the bill, thus reversing the decree of the District Court. This suit was begun in October of 1915 by the Churchward International Steel Co., alleging infringement of two United States patents, Nos. 845,756 and 868,327, issued to James Churchward covering nickel-chrome-vanadium steels and damages were asked to the amount of $2,000,000.

The Arnold Co., Chicago, has a contract for the construction of a roundhouse, boiler house and storehouse at Clifton Forge, Va., for the Chesapeake & Ohio Railroad.



The Links Are Fed from the Rotating Hopper to the Feeding Rail of the Machine. A finger permits one link at a time to be transferred to the gripping tools. The jaws then close and the electrode makes contact. After the desired heat is obtained, the electrode is raised and the heading set delivers a heavy blow, forcing the metal into the desired shape

Japanese Development in Iron and Steel

Actual Production Limited, But Exploitation of Prospects Is Active—Large Government Advances to Private Steel Corporations

WASHINGTON, Oct. 19.—Trans-Pacific politics are emphasizing the world interest in the steel industry of Japan. The Japanese Government is the mainspring behind all the progress which has been made in that industry and just now it is apparently trying to maintain the strength that developed during the war and against the difficulties of readjustment.

The latest information received by the Department of Commerce relates to the advances the Japanese Government has made to five of the important private steel corporations in that country. Each of these is to receive 10,000,000 yen—approximately $5,000,000. The recipients named in the advices of the Department of Commerce are Hokkaido Iron Mill, the Toyo Seitetsu Kaisha, the Mitsubishi Steel Works of Kenjiho, the Penchihu Iron Colliery Co., and the Tanaka Mining Co. The reason for this government subsidy is announced to be the slump in the value of pig iron stocks accumulated by these companies.

Dumping Pig Iron in the "East"

"The accumulated stocks of pig iron," reports the *Japanese Advertiser*, "will be disposed of by effecting dumping in the Eastern countries where iron is wanted. This dumping is being effected by the Mitsubishi Busan Kaisha and the Mitsubishi Trading Co." This frank announcement of the plan for the disposal of the surplus Japanese stocks will probably have considerable interest for the steel industries of the "Eastern countries" where the dumping is to take place.

Efforts on the part of the Department of Commerce to obtain a comprehensive and accurate picture of the Japanese steel industry have met with little success. Apparently this industry is so closely interwoven with the military establishment that only such information is allowed to leave the country as the Japanese authorities desire. Practically all of the industry, except the Imperial Steel Co. itself, is the hands of the big Japanese banks, and these in turn are under the closest government control. A detailed account of the iron and steel industry of Japan has been received by the Department of Commerce from James F. Abbott, commercial attaché at Tokyo, who has transmitted a report on that industry received from the *Trans-Pacific*, which apparently enjoys intimate relations with the Japanese Government. Although Mr. Abbott reported that he is not informed as to the authorship of this account, some of its details have been published in the *Trans-Pacific* under the name of Baron K. Nakashima, the managing director of the new Oriental Steel Co. of Japan—The Toyo Seitetsu Kaisha.

Government Steel Works Dominant

This summary apparently contains all the Japanese Government is willing that the outside world should know about the details of this industry. The Japanese Government and the Japanese steel companies generally are very reluctant to give the details of their business to the public. Says this report: "There is a very keen appreciation here of the fact that the whole industry rests upon an unstable basis with respect to raw materials. All officials and leaders in this line are a unit in looking upon the iron and steel industry of the United States and European countries much as a small concern looks upon powerful and formidable rivals. There is therefore something of a feeling that all Japanese iron and steel enterprises, including the Government works, stand or fall together, according to how successfully they can measure up to other nations. Although there is nothing in the nature of a steel trust, the Government, which is the principal producer, forms a connecting link between important concerns which only number some half dozen. It is thus possible to avoid publicity when desired. Consequently the following material is not complete in all details."

Concerning the Government iron and steel works the report says: "The Government Steel Works is spoken of in Government reports under four different names which mean the same thing, viz.: Yedamitsu Iron Works, Yawata Steel Works, Wakamatsu Steel Works and Edamitsu Iron Foundry. The old plant, erected in 1901, cost about 20,000,000 yen. In 1906, and again in 1916, extensions were completed in each case about 10,000,000 yen. In the middle of 1919 the plant was capable of producing at the rate of 450,000 tons of steel annually.

"During 1919 the Government works operated four blast furnaces, producing 250 tons of pig iron per 24 hr. This, together with about 150,000 tons of purchased and imported pig iron, was made into steel. The equipment includes a boiler plate mill now under construction, capable of turning out boiler plates up to 2 in. thick, 12 ft. wide and 50 ft. long. Until this plant is opened the only boiler plate produced in Japan is being made at the Kure Naval Station, which up to October, 1917, manufactured plates for naval uses only. The Government works are about to open the first tin plate mill in Japan. The works employ about 15,000 men.

"In considering the production and sale of steel products by the Government it must be borne in mind that the enterprise is a national one in which profit making is not the first consideration. The works, in fact, were conducted at a heavy loss prior to the war boom, owing to the fact that they have been supplying materials to other Government departments at less than cost. In its rôle of leadership in the iron and steel industry the Government works is expected to take all difficult and experimental work which private firms are afraid to try."

Pig Iron Supply and Demand

The document presents the following official estimate for the 1919 supply and demand for pig iron in Japan:

Producers	Estimated Supply Metric Tons
Government Steel Works	370,000
Kamaishi Iron Works	110,000
Hokkaido Steel Works	120,000
Hanyang Steel Works	130,000
Oriental Steel Works	30,000
Penchihu Steel Works	60,000
Anshan Steel Works	80,000
Kyonupo Steel Works	80,000
Others	130,000
Total	1,120,000

Consumers	Estimated Demand Metric Tons
Government Steel Works	450,000
Kamaishi Iron Mines	50,000
Mitsubishi Dockyards	40,000
Kawasaki Dockyard	60,000
Hanyang Steel Works	50,000
Asano Steel Works	25,000
Sumitomo Iron Foundry	30,000
Others	353,000
Total	1,098,000

Later figures supplied by Mr. Abbott, taken from the *Japan Weekly Chronicle*, show a 1919 production of 980,000 tons, made up as follows:

	Metric Tons
Government Steel Works	400,000
Kamaishi Iron Mines	80,000
Hokkaido Steel Works	130,000
Hanyang Steel Works	100,000
Oriental Steel Works	30,000
Penchihu Steel Works	30,000
Anshan Steel Works	60,000
Kyonupo	100,000
Others	50,000
Total	980,000

[All the above figures, by comparison with what were regarded as reliable statistics of Japanese produc-

tion of pig iron before the war, appear very large.—EDITOR.]

Steel "Output" Under Japanese Control

In discussing these tables, the report says: "It should be noted that the Government Steel Works, Kamaishi Iron Mines and the Hanyang Steel Works appear both as producers and consumers of pig iron, and that the Hanyang, the Penchihu and Anshan steel companies are in Manchuria or China, so that what they produce will appear as imports. Moreover, nearly all of the Government's production is derived from ores imported from China or Manchuria. The same is true of the Oriental Steel Works, a new concern which only recently began operations, and which expects to equal the Government enterprise when pending extensions are completed. These facts should be borne in mind in considering the table below showing estimates made by the Department of Agriculture and Commerce as to the supply of steel and steel materials controlled by Japan. The steel materials recorded in the second table are derived from the steel listed in the first table, so that the two are not to be added:

Estimate of Capacity or Expected Capacity of Steel Works "Controlled by Japan"—Metric Tons

Steel

	1918	1919	1920	1921	1922-23
Japan	1,150,000	1,600,000	1,770,000	1,920,000	2,000,000
Chosen	15,000	50,000	50,000	50,000	50,000
Manchuria	.....	.....	30,000	60,000	60,000

Finished Steel Materials

	1918	1919	1920	1921	1922-23
Japan	810,000	1,140,000	1,260,000	1,400,000	1,490,000
Chosen	14,000	40,000	40,000	40,000	40,000
Manchuria	.....	20,000	50,000	50,000	50,000

[NOTE.—The above figures are printed here because they appear in the article of Commercial Attaché Abbott, but they are not offered as having any statistical value. No such production as is indicated by the capacity given for Japan is probable.—EDITOR.]

A rough estimate by the Government officials of the probable consumption of finished steel in the immediate future is as follows, in metric tons.

	Metric Tons
1920	1,295,000
1923	1,568,000
1928	2,112,000

Private Japanese Works and Prospects

The report then proceeds to an itemized account of the chief iron and steel establishments of Japan outside of the Imperial Steel Works. It says:

"Kure Naval Station.—The equipment and capacity of this Government enterprise cannot be ascertained, but what evidence there is indicates that it produces annually about 1000 tons of high speed tool steel. Up to the present it also has been the sole producer of boiler plate, most of which has been used by the Japanese Navy. After the United States prohibited the export of steel in 1917 the various shipbuilding firms of Japan were unable to buy boiler plates, since the only producer in Japan was the Kure Naval Station. In October the shipbuilders made arrangements with the Government which authorized the Navy Department to secure extra supplies of materials from the Government Steel Works to be worked up into boiler plates for shipyard use. About 200 tons a month were thus produced and distributed among the shipyards according to capacity.

"Toyo Seitetsu Kaisha (Oriental Steel Mfg. Co.)—This new company was formed in 1917 and capitalized at 25,000,000 yen. It later consolidated with another company, the combined capital being 40,000,000 yen, of which only a part has been paid up. The company is already operating a 150-ton furnace purchased second-hand from an American company at Bristol, Pa. It recently called for further payment of capital for the installation of a new 300-ton furnace which is expected to be ready for operation by the middle of 1920. The company is backed by powerful capitalists who announced ambitious plans at the time when the war boom was at its height, but it is doubtful whether all of the plans will be carried to completion.

"Mitsubishi Steel Mfg. Co.—This enterprise is a subsidiary of the Mitsubishi mining and trading interests. It was formed in 1914 and capitalized at 40,000,000 yen. It is located at Kenjiho, near Chinnampo on the Daidoko River in Korea. The works are not entirely completed yet, but the original plans called for an annual output of 100,000 tons of pig iron, of which half was to be converted into steel and worked into plates, sheets, bars and angles, while the other half was to be sold to the public. Whether the Mitsubishi company will hold to its original program cannot be stated.

"The Kyushu Steel Works, Ltd.—This company, capitalized at 10,000,000 yen, was organized during the war, and is located near the Government works at Wakamatsu. It purchased the plant of the old Yasukawa Steel Co., and began extensions in 1917. At that time the plans were to erect three 50-ton basic open-hearth furnaces, one structural and one plate mill. Some delay was experienced in carrying out these plans, but they are still adhered to. The estimated output of the plant is 50,000 tons of plates and bars, but some doubt has arisen as to the ability of the company to secure a permanent and steady supply of raw materials, particularly pig iron. It is reported that a contract for 60,000 tons of pig iron annually has been closed with the Han Yeh Ping Co. of China, but this is not verified.

"Nippon Seikosho (Japan Steel Works).—The Japan Steel Works is located at Muroran and recently combined with the Hokkaido Steel Mfg. Co. It is capitalized at 30,000,000 yen. The company plans to establish plants in the vicinity of Kobe or Osaka to engage in the manufacture of warships, cargo ships, arms, munitions and general machinery. It will, therefore, consume its own steel products.

"Nippon Seitetsu Kaisha (Nippon Iron Works, Ltd.).—This company, whose new plant is about completed, is located at Orio, near Wakamatsu, northern Kyushu. It is capitalized at 3,000,000 yen. The company proposes to manufacture pig iron, steel and rails, and carry on other related activities.

"Lishan Iron Foundry (South Manchurian Railways).—During the year 1918 the South Manchurian Railway set aside funds to the extent of 1,200,000 yen to cover initial expenses for the construction of an iron foundry at Lishan in Manchuria. Present plans call for ultimate additional expenditures of 2,800,000 yen to enlarge and complete this enterprise. The smelting works were ready to begin operations in December, 1919. The company's plans as to capacity, products or the disposition of products are not available.

"Okura Mining Co.—During 1916 the Okura mining interests leased the Moling Kuran iron mine, located 20 miles from Nanking, the consideration being 2,000,000 yen. The Chinese Government refused to recognize the transaction, whereupon the Japanese Government took over the claim of the Okura company, and after long negotiations the Chinese Minister of War mortgaged the property to the Japanese Government for 20,000,000 yen. During 1917 the Yasukama Steel Co. of Kyushu, Japan, closed negotiations with the Han Yeh Ping Iron & Coal Co., Ltd., of Shanghai (the latter concern being in control of the Hanyang Iron & Steel Works, the Tayeh iron mines and collieries in Ping Haiang) for the construction of a steel foundry at Kurosaki, Fukuoka Prefecture, near the Government Steel Works. Details as to capitalization, equipment and products of this concern are not available.

"The Tokai Kohyo Kaisha (Eastern Sea Steel Co.).—This company, capitalized at 3,000,000 yen, has a new plant in Kyushu, near the Government Steel Works. It has an annual capacity of about 40,000 tons of steel products, most of which consist of plates which it is able to roll up to ⅞ in. thick, 5 ft. by 20 ft. This company receives about 1000 tons of steel per month from the Government Steel Works.

"The Kobe Steel Works, Ltd. (Also known as the Suzuki Iron Works).—This company has a plant at Kobe capable of melting 20,000 tons of steel and 2000 tons of alloys annually. It does considerable work for the Japanese navy, builds marine engines and makes ship castings and forgings for the Teikoku Kisen Kaisha, a shipbuilding company controlled by the Suzuki interests.

"Kishimoto Iron Works.—This company is located

at Nakanoshima, Osaka. It operates two Siemens-Martin open hearth furnaces, each of 25 tons capacity. It imports pig iron from China and produces steel used for making wire nails and galvanized wire. Its wire rod capacity is about 200,000 kegs annually.

"Yasuda Co.—The Yasuda Co. has nail works in Tokyo which produce 150,000 kegs of nails, and a factory in Kyushu where 350,000 kegs are produced annually. The Government Steel Works supplies this concern with wire.

"Osaka Iron Works, Ltd.—In Japanese this company bears a name which is frequently confused with a shipbuilding company (Osaka Tekkojo) and a small steel works (Osaka Seikojo). The Osaka Iron Works was established in 1917 with a capital of 1,000,000 yen. At first it specialized in the production of mild steel bars but expected to extend its operations to angles, tees and channels. Its present capacity is about 5000 tons of steel products a year.

"Sennin Iron Co.—This small foundry is located 12 miles west of Kurosawajiri, Iwate Prefecture. It produces about 4000 tons of high grade charcoal pig iron, supplied to the government.

"Besides the foregoing firms, which are more or less modern, there are many companies operated on a family basis and frequently using charcoal as fuel. During the war boom many of these companies expanded their operations considerably, but it is doubtful whether they could survive any great competition."

The following is a list of some of these concerns, with their maximum capacity, at prices such as prevailed during 1918:

Company	Product	Annual Capacity Tons
Kuriki Iron Co.		
Kurikasawa Iron Works	Pig Iron	2,500
Yasuki Steel Works	Steel	1,200
Oji Electric Steel Co.	Steel	600
Yonako Electric Steel Co.	Steel	2,000
Tsuchibashi Steel Co.	Steel	900
Omori Steel Manufacturing Co.	Steel	1,200
Niitto Seiko Kabushiki Kaisha	Steel	3,600
Tokyo Kozai Kaisha	Steel	3,000
Tokai Denki Seikojo	Steel	360
Nagoya Iron Works	Steel	6
Kurodo Seikojo	Steel	5
Jamuro Iron Works	Steel	6
Okura	Pig Iron	6

Most of these small companies, says the report, produce a high grade steel for special uses, such as rifle barrels, bayonets, files, and so on. The government is the principal purchaser of such steel.

Customs Exemption to Encourage Steel Works Construction

Japanese efforts to establish steel plants in Korea are manifested by the new customs tariff law passed at a special session of the Japanese Diet to govern Korea (Chosen). According to the report to the Department of Commerce by Consul General Ransford S. Miller, at Seoul, article 3 of the new law provides:

"When implements, machinery, or other material necessary for equipping a plant which can produce at one place in Chosen in one year 35,000 or more metric tons of pig iron or steel, or a plant which can increase its production at one place within one year by 35,000 or more metric tons of pig iron or steel, are imported into Chosen they shall be exempted from import duty in a manner to be determined by the Governor General of Chosen.

"The provisions of the foregoing paragraph shall also be applicable when a person establishing the equipment mentioned in the foregoing paragraph imports into Chosen implements, machinery, or other material necessary for the manufacture of by-products designated by the Governor General of Chosen."

Bids will be opened on Oct. 18, on an Illinois waterway to cost $20,000,000, authorized under an amendment to the Illinois state constitution. The Illinois waterway act of 1919 provides that there shall be a channel of at least eight feet in earth, 16 feet in rock, at least 150 ft. bottom width between Chicago and the Mississippi River. The first work is to be done at Marseilles and Starved Rock, Ill., the sanitary canal furnishing a deep waterway from Chicago as far as Lockport.

FOR LOWER IRON ORE RATES

Wharton and Ringwood Companies Allege Discrimination

WASHINGTON, Oct. 19.—Counsel for the Wharton Steel Co. and the Ringwood Co. have filed a brief with the Interstate Commerce Commission in the cases in which these companies attack combination rates charged on iron ore in carloads from mines at Wharton, N. J., to certain blast furnaces in eastern Pennsylvania and New Jersey and from Ringwood, N. J., to points in Pennsylvania and New Jersey in the Eastern iron producing district. These rates, it is alleged, are unjust, unreasonable, unjustly discriminatory and unduly prejudicial in comparison with rates from mines of complainants' competitors on the Mesabi, Menominee and other ranges in the Northwest, at Mineville, N. Y., and other points.

"There are, lawfully speaking," it is set forth in the brief, "some 200,000,000 tons of iron ore in the small area around Wharton. This ore comes in competition with ore in the northern peninsula of Michigan and Minnesota. All that the steel company asks is that the freight rates from those mines at or near Wharton shall be placed on the same basis as the freight rates of its competitors; that is, the same relative basis. The steel company has recently refused a contract for 2,250,000 tons of ore which it could not deliver under the present freight rates."

The Ringwood mines are located in the northern part of New Jersey on the Greenwood Lake division of the Erie Railroad. The ore from the Ringwood mines comes in competition with all the high phosphorous ores in the East as well as those in the Lake Superior district.

"As typical," counsel for the Ringwood mines sets forth, "the proposed rate from Ringwood to Alburtis, Pa., should be $1.30, instead of $1.60 as at present. Under the existing rate structure the Ringwood Co. has found it difficult to obtain a profitable price for Ringwood ore. It has declined numerous offers, one large concern having offered to take the entire output of the mines at the price of 12c. per unit, which was declined. If a relative base of rates were established from Ringwood mines the Ringwood Co. undoubtedly would sell more ore in competition with the Lake ores." * * *

"Complainants propose a schedule of rates based on those in effect prior to Aug. 26, 1920, in accordance with the formula laid down by the commission in the B. Nicoll case; that is, 5.5 mills per ton mile plus 30 cents non-haulage. To the rates established by that formula we have added the increase of 15c. per gross ton, effective Aug. 9, 1917. This advance, it will be remembered, was made on all iron ore rates, including those from the Northwest ranges to the upper lake ports and from the lower lake ports to all blast furnaces. To this total we have added the general 25 per cent increase, provided for in General Order No. 28 of the Director General, effective June 25, 1918. We do not believe that any further increase should be made in these rates for the future.

"We also urge that the rates from the Richard, Mt. Hope and other mines on the Mount Hope Mineral Railroad, Sterlington, Fort Montgomery, and Port Henry should be adjusted on the same relative basis as the rates from the Replogle mine and the Peters and Cannon mines. That is to say, all rates should apply to the point where the ore is offered to the carrier for through transportation."

No. 2 furnace of the Pittsburgh Crucible Steel Co., at Midland, Pa., which was completed several weeks ago, was blown in Oct. 9. This furnace has a rated capacity of 600 tons per day and is running on basic iron. The company has both of its furnaces in blast at present, but it is expected that in the near future No. 1 stack will be blown out and overhauled. The company also expects to have in operation at no distant date its new by-product plant, consisting of 100 Koppers patent ovens.

SWISS MACHINERY INDUSTRY

Foothold Obtained in the World's Markets for Machine Tools

Of the various Swiss industries which were making rapid strides during the war, the machine industry may be singled out as having witnessed a particularly marked development; in fact it is no exaggeration to say that the industry has largely succeeded in freeing itself from its dependence on Germany. That the machine tool line has done extremely well will hardly come as a surprise in view of the fact that the outbreak of the war witnessed an unprecedented demand for all kinds of machine tools in practically all countries, a demand which the German industry through the exigencies of the war was unable to meet. The Swiss industry lost no time in getting to work, turning the opportunity to practical advantage and soon securing a firm footing in such countries as were formerly covered by Germany as, for instance, Spain, Japan, and South America.

German Machines No Longer Cheap

It should be remembered that prior to the war the Swiss machine industry was unable to hold its own against German competition in the matter of prices for a given quality but the war and its economic consequences have brought about a complete change in the situation and while some kinds of German machinery are still being sold in the world's market at prices which hopelessly outclass foreign competition, the proverbial cheapness of German machinery is no longer existing.

Parallel with the extraordinary increase of the productive capacity of the Swiss industry runs a strong movement for the organization and co-operation of the various forces at work with a view of building up and extending her export trade. While before the war the Swiss industry hardly considered it necessary to engage in foreign trade propaganda—relying solely and almost exclusively upon the reputation of her goods in the world's market—it was soon realized that this conservative way of doing business in the international market would come to grief the moment manufacturing of munitions and war material ceased and the machine industries of the various countries were looking for an outlet for their surplus production. The promotion and organization of foreign trade on systematic lines was therefore vigorously carried on both by commercial associations and the Government, new trade information bureaus were established, the scope of existing ones extended so as to cover a wider field, exhibitions and fairs were arranged—in short, strong efforts were made with a view of preparing the Swiss industry for a keen struggle in the world's market.

Why an Effort for Extending Exports

In order to gain a clear idea of the stupendous development of the industry, it is necessary to contemplate for a moment the following figures:

Export of Machinery (In million of francs)

	1913	1914	1915	1916	1917	1918
Machine tools....	2.38	2.44	16.4	48.7	45.44	23.8
Gen'al machinery.	112	89	117	179	177.6	178

These figures strikingly reveal the remarkable development of the industry, particularly the machine tool line; they show, however, at the same time, that the year of 1916 brought the greatest volume of export business while a decline set in during the following years. The latter fact may be accounted for by various reasons, the chief cause being the difficulty in obtaining the required raw materials the scarcity of which made itself increasingly felt. In order to understand fully the importance of this problem with which the industry was beginning to be confronted in the early part of 1917, it should be remembered that Switzerland is entirely dependent of other countries as regards her supply of ores and coal. And economic measures and restrictions to prevent the utilization of raw materials for war purposes had far-reaching effects. Besides, the steadily advancing German prices were beginning to tell as were constantly recurring wage claims.

Compared with 1918, the export figures for the first half of the year 1919 show a decline of 20 per cent. This slump affected particularly the mill and textile-machinery lines though the oil-motor and water-turbine branches also recorded a distinct falling-off in foreign orders.

It is interesting to note how the export markets of Switzerland shifted during the war. The figures in the following table represent in percentages of the total export and the distribution of Swiss machinery products, covering the years 1913 to 1918.

	France	Spain	South-America	Russia	England	Italy	Germany
1913	20	6	7	15	5	10	15
1918	38	8	4	..	10	12	10

A new market for Swiss machinery was found in Holland with 5 per cent of the total export.

Coal and Iron Output of Upper Silesia

WASHINGTON, Oct. 5.—A summary of the output of coal and iron in Upper Silesia in 1919 has been forwarded by Consul Frederick Simpich, who is attached to the American commission at Berlin.

"The report of Oberschlesische Berg und Huettenmaennische Verein, E. V., covering the year 1919, shows that in 1919 there were 63 anthracite coal mines operating in Upper Silesia, wherein 1,235 steam hoist engines were used and 388 electric motors were in use, as against 405 in the preceding year," says Mr. Simpich.

"There was 35 per cent less coal produced in the mines in 1919 than in the previous year; 21,204,043 tons of coal were shipped from these mines in 1919, as against 36,113,360 tons in 1918 and 40,337,215 tons in 1913.

"Iron production has decreased considerably in the last 10 years in Upper Silesia, as is shown below: 1901, 457,126 tons; 1913, 138,204 tons; 1918, 62,194 tons; 1919, 61,469 tons.

"Pig-iron production has been as follows: 1913, 994,601 tons; 1918, 696,146 tons; 1919, 459,954 tons.

"The value of pig iron and its by-products amounted to 186,420,000 marks in 1919, as against 125,890,000 marks in 1918. Foundry production declined 30 per cent in 1919 as compared with 1918. Upper Silesia produced 24,451 tons of steel castings in 1919, as against 97,757 tons in the previous year. The same district produced 439,227 tons of ingot iron, or only 34 per cent of the production in 1918. The production of wrought iron decreased by 51 per cent. The production of crude zinc amounted to 74,023 tons, valued at 138,608,000 marks, as against 122,961 tons, valued at 110,890,000 marks, in 1918. The production of lead in Upper Silesia in 1919 was 17.7 per cent less than for 1918, and the production of silver declined by 27 per cent.

"The total number of miners employed in Upper Silesia in 1919 was 226,445. After the repatriation of war prisoners, this number was increased to 233,339. Among the miners employed here in 1919 were a large number of Russian prisoners of war who are now regarded as settled workmen."

New England Foundrymen's Association

Rev. David Fraser, Somerville, Mass., was the speaker of the evening at the October meeting of the New England Foundrymen's Association, at the Exchange Club, Boston, Oct. 13, at which A. B. Root, Jr., president, presided. Mr. Fraser took for his subject "Americanism," and during his address said that one of the chief perils this country is facing to-day is the lack of interest shown by successful business men in politics. He went on record as being in favor of taking away the citizenship of the business man who failed to vote on election days, and he feels that it is just as honorable for the business man to be an alderman as it is for him to be a trustee of a college. The members of the association acted favorably on the application of the S. Obermayer Co., Syracuse, N. Y., for membership, in behalf of I. D. Adams, Eastern representative.

Meeting of American Foundrymen—II.*

Sessions on Industrial Relations and Non-Ferrous Topics—Committee Reports — President's Annual Address

THE problems of industrial relations were assigned a more important place on the program this year than ever before and the 13 papers and three committee reports scheduled testify to the interest in this subject. Two sessions were taken up solely with these papers, one on Wednesday afternoon, Oct. 6, and one Thursday morning, Oct. 7.

Industrial Relations a Phase of Management

"The biggest waste in industry to-day is the failure to utilize the productive good-will of which the American workman is so richly capable of contributing," said Meyer Bloomfield, Bloomfield's Labor Digest, Boston, in the opening address of the Industrial Relations session. Efforts to recover this loss have given rise to the study of "industrial relations," which has become a catchword much like "scientific management," "efficiency" and "system," and to a certain extent has fallen into disrepute because its true significance is not generally appreciated. Industrial relations, Mr. Bloomfield pointed out, merely constitutes a phase of management, deriving its present importance from the nature of modern industry with its lack of personal contact between employer and employee. One of the principal needs of the time, he stated, is to find some means of bridging the gap between employer and workman and thereby eliminating causes for misunderstanding and ill-feeling.

Each Problem Has Own Solution

There is no one program of industrial relations which is universally applicable. As Mr. Bloomfield pointed out, a program may be narrow or broad, wise or unwise, but if it deserves the name at all it must grow out of the peculiar needs and conditions of the particular shop or industry. There may be a certain amount of showy window dressing, a lot of self-deception and a tiding over of difficulties for the time being, but neither responsible executives nor the workmen will long put up with industrial relations activities that are not native to the soil.

This idea was expanded by Ralph M. Wells, Employment Managers Association, Boston, who mentioned numerous factors which are variable for each plant, among them the hours of labor, wages, character of products, distance from other labor centers, competition with other employers; requirements as to skill, training and intelligence in the workmen; the personnel of the supervising force; the labor traditions of the plant; local public opinion in labor controversies; housing facilities, schools and playgrounds, theaters and churches.

All of these elements must be carefully studied before any industrial relations plan is devised, and efforts should be concentrated on finding out exactly what few measures are required to iron out the difficulties in the industry, rather than to see how elaborate a program can be worked out. Mr. Wells laid particular stress on the importance of eliminating small points of friction in a works organization. Often an unnoticed condition will incur the ill will of employees and counteract all of the betterment work which may be undertaken by the management.

A Defense of the Foreman

"Blaming the foreman for industrial ills is a most popular indoor pastime," said Charles Prosser, Dunwoody Institute, Minneapolis, in discussing the foreman's relationship to the worker. Criticisms of the foreman, however, have been destructive rather than constructive and indicate a failure to understand the difficulties besetting him under modern industrial conditions. Many short-sighted employment managers, Dr. Prosser said, have made a rubber stamp out of the foreman. Sometimes foremen are so numerous that they, like their gangs, have become mere brass tags in the minds of the management. Too often initiative has been largely taken away from the foreman through the centralization of both production and employment matters. As the struggle between capital and labor has grown more bitter many employers have become distrustful of their foremen, fearing that they will be contaminated by radical propaganda. Sometimes elaborate schemes for welfare work have been put into effect with the idea of buying up the loyalty of the workmen over the head of the foremen. To a large degree the foreman has lost his old-time position as leader of his men and is looked upon with suspicion as an outsider and a one hundred per cent company man.

Despite these facts, Dr. Prosser is of the opinion that better industrial relations can best be fostered through the medium of the foreman, and to this end he must be encouraged to win the confidence of his men by taking an active interest in their viewpoint in connection with matters affecting their relation with the company. The foreman should also be given final authority to hire or discharge those under him. In this connection, Arthur H. Young, International Harvester Co., Chicago, stated that in his company the function of the employment manager was to select likely applicants for jobs and to send them to foremen for their approval. The foremen are authorized to recommend the discharge or transfer of an employee and in case the employment manager does not confirm the request after making an investigation, the final decision lies with the superintendent.

Training the Foreman

"I believe that in the past many companies have failed to recognize the true value of the most important man in their producing organization—the foreman," stated M. C. Evans, International Harvester Co., Chicago, in an address on the "Development of Foremen." "To the workmen in the shop the foreman is the company and through him they learn the policies and wishes of the management," he added. He described in detail a foreman's development course which was conducted during six months of last fall and winter at the plants of his company and emphasized the fact that the course was largely arranged by the foremen themselves and that they, on their own initiative, invited many of the executives of the company to deliver lectures in the course. Membership and attendance at the classes was optional; yet the attendance averaged nearly 90 per cent.

Need for Centralization of Employment

In a New England works the foremen themselves recommended a centralized employment plan as a check on the re-employment of workers who had been discharged from one department for inefficiency or other important reasons, said Ralph M. Wells in the course of his address on employment problems. The large scale of modern industry, which makes personal and intimate contact between management and workers im-

*The reports of the papers on industrial relations and non-ferrous subjects as well as some other important matters were crowded out of last week's issue of THE IRON AGE. They are included in this report.

possible, has resulted in an effort to obtain this contact through a new agency, generally a centralized employment department, said Mr. Young in touching on this question. Formerly the hiring of a man was nothing more or less than the crooking of the foreman's finger and his discharge was an equally simple matter. This old method of employment, however, became inadequate with the growth of industry. He stated that there are cases on record in some firms where the same man was hired and fired 10 or 12 times and for the same cause each time—because he wouldn't work. There was no central clearing house, no passing on of the information that the first man hiring him secured. In describing the work of placing the right man in the right job, Mr. Young recounted each step from the time the applicant appears at the employment office until he has been escorted into the shop and introduced by the foreman to some of his associates in his new work.

Familiarizing a Man with His Job

"Statistics show that the greatest percentage of labor turnover occurs in the first week of employment," said James W. Brown, Chain Belt Co., Milwaukee, in discussing "Industrial Relations Departments." "A new entrant," he said, "should be taken in hand by the foreman and introduced to his fellow workmen to make him understand that he has joined an industrial family and that he is a member of such. He should be shown the place his clothes are to be hung and the machine or bench he is to work on. He should then be introduced to the instructor, who should make it plain to him that any information he may wish, or any tools or supplies he may require, or any help he might need will be gladly furnished at any time." He stated that the foreman should not be depended upon for instruction, as he is charged with getting out production. For this reason, he stated, the Chain Belt Co. set aside portions of their departments for beginners' schools. In the malleable iron foundry of the plant, the molder apprentices are kept separate from the journeymen molders and under the supervision and care of competent instructors are told the proper way of performing each operation and the reasons why. He stated that the company had graduated nearly 50 molders in the last nine months.

Selling the Company to the New Man

The importance of winning the interest of a new employee in the company was emphasized by Mr. Young in his address. After the applicant has been approved by the examining physician, it is the employment manager's job to "sell" the company to him, to tell him something of the history of the plant and what promotional opportunity there is there for him. "Some plants make a practice of giving new employees a motion picture show or illustrated lantern slide lecture, showing first the town, the location of the plant, the different residence districts, the names of the streets leading to the plant, the surrounding country, then a view of the plant itself, the gates, the pay stations, etc., and then, by means of photographs and diagrams, the whole process of manufacture at that plant.

"The wise employment manager will also have in his files a list of substitute occupations. He will find out at the time a man is employed what his aspirations are and what he may be studying to fit himself for. Then, too, there are times when a man is hired for a certain position who is capable of something better, but there is no opening in his particular line just at that time. By maintaining such a file, the employment manager will be able, when a requisition is received for a man with those qualifications, to offer this promotional opportunity to a present employee, rather than hiring someone from the outside. This will do much to aid continuity and stability of service."

Physical Examination of Applicants

All applicants for work in the International Harvester Co. plants receive a complete physical examination. The purpose of this is not that industry proposes to rid itself of all men who are not physically perfect, but that no man will be assigned to a job that will work a physical hardship upon him. The men are graded into three classes, A, B and C, those in class C being rejected.

The point was raised that it was unjust to bar any man from work, and in fact was a dangerous practice as it would tend to increase the ranks of malcontents and radicals. Mr. Young replied that the number of rejections were very small. One of the grounds for rejection is communicable disease. This does not constitute a permanent bar to employment if the applicant is later cured of his ailment.

Mr. Bloomfield cited a number of companies which have done much to take care of the physically handicapped in their organizations. In the Ford Co., for instance, one blind man does the work of two normal men on some kinds of work. The Goodyear Tire & Rubber Co. has found deaf mutes very competent for certain classes of work. Mr. Bloomfield called attention to the fact that an advantage of employing physically handicapped workers was that the problem of labor turnover was eliminated or at least materially reduced.

He stated that the merits of physical examination must be "sold" to the workmen and particularly the union men. There has been considerable opposition to physical examinations on the part of labor organizations, which is based on the belief that it is a sort of blacklist. Specific examples of the dangers of employing the physically unfit should be brought to the attention of doubters, he said. He cited an instance of a printing press accident resulting in numerous injuries and several fatalities which was due to the fact that one of the operatives had an epileptic fit. Had physical examination been made in that shop, the epileptic would not have been entrusted with the work to which he was assigned.

The Shop Committee on Trial

"High guaranteed wages, a greater number of hours totally free from work, or guarantees that the men need not do more than a certain fixed limited task within any working day are things which employees understand and appreciate," said Ray Vance, Brookmire Economic Service, Inc., New York, in an address on Various Plans of Industrial Relations. "But such phrases as 'going into partnership with the boss' mean to them 'speeding up' and a whole train of other bogies which they have been taught to fear." Whenever any plan of industrial co-operation is broached, the dominant mental reaction of the employee is suspicion. Notwithstanding this condition, Mr. Vance stated that various plans had succeeded in this country and that his remarks would deal with them rather than with untried theories. He took up briefly the merits and disadvantages of voluntary bonuses and profit sharing, stock selling plans, specific bonus plans, shop committees and so-called "industrial democracies."

One of the principal objections to the profit sharing plan is that the average employee will see very little connection between his personal efforts and the net profits of the corporation. The length of time likely to intervene between bonus or profit sharing payments is so long that the employee is apt to lose interest in the meantime. The stock selling plan finds its main weakness in the fact that it usually affects only a minority of employees. A further weakness lies in the fact that the employee rarely is able to accumulate a sufficient number of shares of stock to make any very appreciable addition to his income. Bonuses which are made directly dependent upon personal efforts of the employees are condemned by many as tending to produce speed at the expense of quality. More common and more generally approved bases of bonus payments are: regularity of attendance on work; length of service; high percentage of perfect production units turned out; saving of waste material, etc. This type of bonus for efficiency in work, Mr. Vance said, has the further advantage that it can be calculated over short periods so that the employee has before him a direct reward for his own efforts with very little fear that his efforts will be nullified by others over whose work he has no control.

The bonus, stock ownership and profit sharing plans have several characteristics in common. They are

adopted by the management. If the employees are permitted to make any decision, they reject or adopt the plan as a whole. The plans do not take away from the management any authority as to business policy or productive plans. Because these schemes failed to meet the general weakness of lack of interest on the part of employees, two new groups of industrial relationship plans have been developed which are revolutionary in that they involve the surrender by the management of certain powers relating to production policies and factory discipline. One group includes organizations called industrial democracies and the other, various forms of shop committees. The industrial democracy systems present very little variation in type of organization. The three functioning bodies in an industrial democracy are the cabinet, consisting of the major executives of the company; the senate, made up of minor executives, department heads and foremen, appointed by the management; and the house of representatives, elected by secret ballot from the entire body of workers. The principal weakness of the plan is that it carries with it the theoretical possibilities of an absolute deadlock on any policy, which might result in a strike.

The surrender of power by the management is a feature of real shop committee plans. The most general provision for this surrender of power is the agreement by the management to carry out every policy which secures a unanimous vote in a joint meeting between their representatives and those of the employees. Most plans provide for an appeal in case of disagreement. These appeals go upward until many of them end with a definite provision for carrying the case to an outside board of arbitrators.

While the shop committee and industrial democracy plans have the advantage of placing definite responsibility upon the employee, Mr. Vance was of the opinion that these schemes in practical operation demand some sort of profit sharing or wage dividend scheme to complete the appeal to the employee's self interest.

Union Labor and the Shop Committee

During the course of the sessions the question was raised as to what the attitude of union labor was towards the shop committee plan. On this point Mr. Young stated that the International Harvester Co. plants are operated on the open shop principle but that many employees are union men and have shown themselves fully in sympathy both with functionalized employment management and works council work. Opposition, he said, is centered in the union leaders who are farther away from their constituencies in viewpoint then the absentee landlord is from his tenant.

Americanization a Process of Give and Take

"Foreign labor is indispensable to the continued growth and development of the industries of America," said R. M. Little, Safety Institute of America, New York, in an address before the delegates as a whole, assembled in a smoker. "As their labor is indispensible it behooves the industries to give them a square deal and not to exploit them, to see that they have equal treatment with everybody else. . . . The industrial attitude toward the foreign-born should be one of kindness and considerate and intelligent treatment. Americanization in industry is a mutual process of give and take. We take from them and give to them; they give to us and take from us. The process is as reciprocal as life itself and is an important factor in the building up of our industries. Industrially we must understand them, believe in them, and sympathize with them."

Mr. Little stated that while the Anglo-Saxon element has been the dominant influence in the development of this country, America is not alone for the Anglo-Saxon people, but also for the liberty-loving people of other nationalities and races. Americanism, he said, is broad enough to include the values of all the elements represented in the population. If we were to resolve the question of Americanism upon the rights of priority, he pointed out, the Indian tribes would be more entitled to call this their own than any of the other peoples in the country.

A Practical Demonstration in Americanization

One of the most interesting features of the Industrial Relations sessions was a practical demonstration in the teaching of English to foreigners, conducted by John R. Dyer, secretary, industrial department, International Committee, Young Men's Christian Associations, New York. A group of about twenty non-English speaking foreigners from a Columbus plant were assembled before him and by acting out words as he pronounced them, he taught them a number of simple sentences. Subsequently he identified the spoken words with the printed words, as shown on a chart, this being a method of teaching reading which supplements the method of teaching foreigners to speak the language. Although the demonstration was necessarily short, it was ample testimony not only to the merits of the system used (the Roberts method) but to the aptitude of the subjects of the test. Incidentally, it was brought out that while the men were drawn from the ranks of common labor they all were able to read and write their native tongues.

The Man Away from Home

In the course of his remarks Mr. Dyer defined the foreigner as "a man away from home." He stated that there are now 15,000,000 people in this country who are away from home. The problem of Americanization, he said in effect, is to make these strangers feel at home in the land of their adoption.

An Appeal for the Technical School

Technical schools have failed to measure up to the expectations of industry because they have not received the necessary support and co-operation of those who employ the college graduates. This was the purport of remarks by R. E. Kennedy and Bruce W. Benedict, shop laboratories, University of Illinois, Urbana, Ill., in addresses before the Industrial Relations sessions. The destiny of industry, Mr. Benedict said, is in the hands of two per cent or less of those who compose it. If there isn't efficiency at the top there is no possibility of efficiency in the ranks. It is easier to train the ninety-eight per cent than the two per cent. The technical schools, he pointed out, are trying to do their part in training men for executive positions. It has been charged that theory is of little use in the work-a-day life of modern industry, but this charge does not bear analysis. The man who acts before he thinks is a blunderer. Correct theories put into practice save many a minute and many a dollar. The technical schools, Mr. Benedict asserted, are better prepared to teach the necessary theories than any other agency. To be of real service in the foundry industry, however, the schools must be given the proper support. They should be assisted in securing modern equipment, the cost of which has been prohibitive with the inadequate funds at the disposal of the colleges. Instructors and students should be given summer work in foundries to give them a proper perspective of the practical problems of the industry. The American Foundrymen's Association, he said, will eventually recognize the necessity for experimental foundries for research work. The technical school is the logical location for such a foundry.

At the conclusion of Mr. Benedict's remarks a motion was passed requesting the directors of the association to appoint a committee to investigate existing agencies for training executives and pursuing research work and to consider the subject of the solicitation of funds from the association for the promotion of those activities.

The Non-Ferrous Sessions

Three sessions were devoted to the non-ferrous industry. These were held by the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers and were simultaneous with the steel and iron sessions. This year the American Foundrymen's Association extended its aid by securing most of the papers. These efforts were successful, many practical papers being scheduled.

The first session devoted to these topics was called to order Tuesday morning, by Wm. H. Bassett, American Brass Co., Waterbury, Conn, who presided throughout the session. The earnestness with which the non-ferrous group regards its work and problems was made manifest, as usual, by the excellent attend-

ance. The prepared program was followed without deviation. The papers were as follows:—

"Investigation of Brass Foundry Fluxes," by C. W. Hill, T. P. Thomas and W. B. Viez.

"Laboratory Testing of Metal Cores and Core-binders," by F. L. Wolf and A. A. Grubb.

"The Reclamation of Metal From Brass Foundry Refuse," by F. L. Wolf and J. E. Alderson.

"A New Process for Making 15 Per Cent Phosphor Copper," by P. E. Demmler.

"The Relation of Die Casting to Foundry Practice," by Charles Pack, Doehler Die Casting Co., Brooklyn, N. Y.

"The Solubility of Hydrogen in Molten Copper and Copper Alloys," by C. W. Hill, T. P. Thomas and G. P. Luckey.

"Carborundum Refractories in Non-ferrous Metallurgy," by Dr. M. L. Hartman, Carborundum Co., Niagara Falls, N. Y.

Die Castings

Charles Pack, Doehler Die-Casting Co., in his paper, although admitting that great progress had been made, stated his belief that developments in the art of metal castings had not kept pace with the rapid strides made in other branches of manufacturing. He said that although the use of the metal mold antedates that of the sand mold by several centuries, yet men still are seeking a satisfactory permanent mold. He referred to the difficulty in finding a material that would enable the permanent mold to withstand heat to a degree that would permit the production of a sufficient number of castings to compensate for the cost of the mold itself, a cost which sometimes amounted to $3000. Once such a material is found there is no limit to the possibilities in die-casting with metals heretofore unused in the process. He stated that a suitable die material for casting aluminum alloys has been solved and 50,000 to 100,000 aluminum castings can now be made from a die before it begins to show any indication of wear. The process at the present time is limited to castings having an overall length not exceeding 24 in. and weighing not over 10 lb. The speaker stated, however, that it is safe to assume that the process will gradually develop to include larger castings. He stated that aluminum castings are now produced with a maximum variation of 0.0025 in. per inch of diameter or length, and that holes as small as 0.093 in. can be cast. Outside treads of moderate accuracy can also be cast. The speaker concluded: "Many efforts have been made by both the foundrymen and die-casting manufacturers to develop a process for casting brasses and bronzes in metal molds. Large sums of money have been spent in fruitless efforts to accomplish this result. At the present time the writer is of the opinion that we are as far from a solution to this problem as we were fifty years ago." He gave in his paper a summary of the requisites for permanent molds and said that a material to assist these was not yet available.

Aluminum Casting Losses

At the non-ferrous session Wednesday morning, the first paper was one on "Casting Losses in the Aluminum Foundry," by Robert J. Anderson, Bureau of Mines, Pittsburgh. The author discussed the causes of casting losses and listed a large number of contributing factors under the headings of metallurgical factors, molding factors and miscellaneous factors. He also touched upon the relation of casting losses to the kind of castings made, the composition of the melting charge, the melting ratio and the rate of production. The author regretted that records of casting losses were not kept in considerable detail in the smaller foundries, but in investigations made it was found that the greatest individual cause for loss is cracks, and this defect is one of the most difficult to eliminate since it may be due to one or a combination of causes. Core troubles in foundries are generally prevalent, and many of the casting losses are traceable directly to cores. The tendency in aluminum foundry practice is toward the use of green sand cores wherever possible because of the greatly decreased production costs which may be effected by their employment. The Bureau of Mines had endeavored to get some information with regard to the effect of different methods of melting upon casting losses, but the data furnished was very contradictory. However, the Bureau hoped to issue a report later in regard to this question.

The paper stated that the problem of reducing casting losses in foundry practice must be solved individually and the following suggestions were offered as being applicable: Adequate technical control of raw materials and tests of the manufactured castings; comprehensive casting-loss records which give the reason for the rejection of every casting poured; close inspection of molds, before closing, by a competent mold inspector; daily conferences on the results of the previous day's work; and reduction of the labor turnover by application of known methods.

Temperatures and Shrinkage and Solidity

"Pouring Temperatures as Affecting Casting Shrinkage and Solidity," was discussed in a paper read by R. R. Clarke, Nolte Brass Co., Springfield, Ohio. The discussion concerned chiefly those castings in which the bulk was heavy or variable or the ratio of volume to surface high. The paper dealth with the advantages of hot pouring, the primary advantage of which is a clean, solid unshrunken casting realized through a comparatively small gate easily removed. Additional advantages are the suppression of the hair line fracture, of gate pin holes, and the nullified effect of molding inconsistencies to which cold metal is so peculiarly sensitive. A hot metal mold requires sand rather dry, rammed hard, faced well, vented freely and clamped or weighted securely in pouring. Similar precautions should be taken against the burning in of cores. The author stated that, because of the extreme oxidization and the occlusion and expulsion of gases resulting in porosity, extreme caution must be used regarding high pouring temperatures. The writer regretted that he was unable to furnish pyrometric rather than mere judgment values on the temperatures to which he had made reference in the paper, but cited many instances in which troubles had been overcome by hot pouring.

During the discussion of the paper it was brought out that the cleavage line in packing rings and other similar castings had been eliminated in electric furnace practice by watching carefully the melting practice. This cleavage line is always due to excessive oxidization. Experiments were conducted in one instance to determine where the oxide comes from, and the final decision was that it comes from the furnace atmosphere.

Sand burning in phosphor bronze was discussed, and Mr. Clarke stated that he had overcome this difficulty by making a mixture of half new and half old sand, thoroughly sieved on the floor. Heavy castings were rammed hard, and after the pattern was drawn the mold was faced up well with graphite and poured hot.

The New Booth Furnace

A new electric furnace for melting brass was described by C. H. Booth, president Booth Electric Furnace Co., Chicago. Mr. Booth also gave some suggestions as to how savings may be effected by operating furnaces in multiple. The electric furnace field is capable of greater development, and that good progress is being made was evidenced by the number of exhibits at the convention. The question of cost of operation was discussed, and it was the author's opinion that speaking generally the cost of melting in an electric furnace as compared with other fuel fired furnaces would be about one-half.

Electric Furnaces in the Non-Ferrous Industry

A paper, "Status of the Electric Furnace in the Non-Ferrous Industry," by Edwin F. Cone, associate editor THE IRON AGE, New York, scheduled for this meeting, was delivered at Friday morning's general session owing to the author's non-arrival because of a late train. The papers are to be found on other pages of this issue.

Papers dealing with the use of "Coke and By-Products as Fuels fro Metals Melting"; "Producing Small Non-Ferrous Castings," were submitted by F. W. Sperr, Jr., of Philadelphia, and R. H. Sullivan, of the Yale & Towne Mfg. Co., Stamford, Conn., respectively.

Committee Reports

W. A. Janssen, American Steel Foundries, Chicago,

and chairman of the meeting, reporting for the committee on steel foundry standards, stated that he had hoped to make a report on the proper procedure to be employed in making physical tests, but that this would be taken up with a committee of the American Society for Testing Materials. Mr. Janssen regretted that the reports of previous committees had not been followed up in making American Foundrymen's Association standards effective, and suggested these standards be published in pamphlet form and that foundrymen generally be asked to follow them out.

Sulphur and Phosphorus Limits

R. A. Bull, for the joint committee on investigation of phosphorus and sulphur in steel, submitted the following report:

Considerable work has been done in securing data and specimens which have undergone service tests, and in the manufacture of special material for investigation. It is not necessary to here supplement what has previously been reported in the technical press by the committee on publicity concerning the activities of the joint committee. It is, however, pertinent for me to say that the work is progressing energetically but will naturally require much time before it is concluded. The makeup of the joint committee is such that it is hoped all producing and consuming interests will accept the findings.

There has been only one meeting of this committee since your representative became a member thereof. He there offered a suggestion which was approved and is of interest to this association. *It is planned to issue a questionnaire to the steel casting manufacturers requesting that they set aside suitable steel castings which contain high percentages of phosphorus or sulphur which are occasionally made in heats that are "off" in analyses. The idea is thus to accumulate a suitable number of steel castings to ascertain by testing the effects of phosphorus and sulphur in cast steel. The questionnaire will indicate the sections desired which may be cut from the castings, and will go into the matter of annealing, as well as the history of the heats involved. Your representative urges all steel casting manufacturers, irrespective of their membership in the association, to co-operate in the suggested accumulation of material for such an important purpose.*

Your representative will co-operate in the fullest degree with the representative of the Steel Founders' Society, who strongly favored the participation of the A. F. A. in this joint investigation.

Specifications for Castings

Mr. Bull also presented the report of the committee on specifications for steel castings, which was in part as follows:

There has been no occasion for the committee to co-operate with a similar committee of the American Society for Testing Materials or any other body in the actual framing or modification of specifications. The specifications of the A. S. T. M. and of most large consumers of steel castings now stand as they did a year ago, the A. S. T. M. having decided at its meeting last June to continue for another year a maximum limit of 0.06 per cent for both phosphorus and sulphur in steel castings.

It is proper now to point out the growing importance given by engineers to the matter of true elastic limit of steel, and to recommend to the members of this association that individual investigation of extended character be made to determine the relation between the true elastic limit and the other physical properties of steel. The art of testing has not reached the stage where the average operator can be relied upon invariably to report the true elastic limit. It is not out of place to state here that the use of the Berry strain gage, in determining elastic limit, has extended among testing engineers. Your committee regards it as most important when reporting the elastic limit to state how it was determined. We are hopeful that at no distant time a reliable method of determining this property may find universal acceptance in the most scientific circles and yet prove to be one which can be practically applied with the least possibility of error, and loss of time in testing. The committee considers it advisable to here emphasize the fact that the yield-point determined by the drop of the beam of the testing machine does not often coincide with the result obtained by an extensometer or by a strain gage, the yield point almost invariably showing a higher result.

Believing in the inconsistency of specifying physical properties in conjunction with chemical composition (except maximum limits for phosphorus and sulphur), your committee proposes to exert its influence against specifying limits for carbon, manganese and silicon. It also believes in the wisdom of adhering to the present limit of 0.06 per cent for phosphorus and sulphur pending results of the present joint investigation of phosphorus and sulphur in steel.

President's Annual Address

President C. S. Koch, in his annual address at the smoker, said in part as follows:

During the past year the by-laws of the association have been altered in order that the members may choose not only the directors but the officers as well. Provision has been made for the selection of a nominating committee by the board of directors as a whole and, further, machinery has been established by which a petition ticket can be placed in running directly by the members.

In answer to what appeared to all to be an urgent need, and after much discussion, there has been established a new section in the association, devoted to the interests of the non-ferrous branch of the foundry industry. As it appears to the directors, this in no way should interfere with the activities of the Institute of Metals, nor affect the relations of that body and our association.

During the past year, particularly through the efforts of your past president, R. A. Bull, your association has a representative on the committee, fathered by the United States Bureau of Standards, which is making an exhaustive study of the effect of phosphorus and sulphur on the qualities of steel in whatever form used. This question is not only of more or less direct importance to many members, but is a serious economic matter to the country.

Each year the difficulty of obtaining proper housing for the exhibition grows rapidly. If it be the desire of the association to have this feature continue to grow, it may be necessary to radically alter the basic ideas and principles which have been in existence for the past years. A change each year geographically in the location of the convention seems desirable from many standpoints. A restriction of the lines represented by the exhibitors appears impossible. Rather, each year has been seen the beneficial effect due to the extension of the lines. A reduction in the number of exhibitors would be regrettable. Less space allotted to each exhibitor is not practical. A great problem, therefore, is before the future officers and directors.

Only one or two phases of the status of the association can be said to be regrettable:

First.—This association, the only strictly technical group devoted to our industry, has only 1600 members. There exist about 6000 foundries in the country. This is not as it should be. If the number were greater the activities could be extended. The matter of a service department for our association is being investigated by a special committee at the present time. The lack of funds may be a restraining factor in progressing with this work.

Second.—The amount of discussion which takes place after the reading of a paper is usualy too meager. No more can be said here than to urge the members to greater activities along these lines, and it is with pleasure that your president notes the improvement in this matter at this convention.

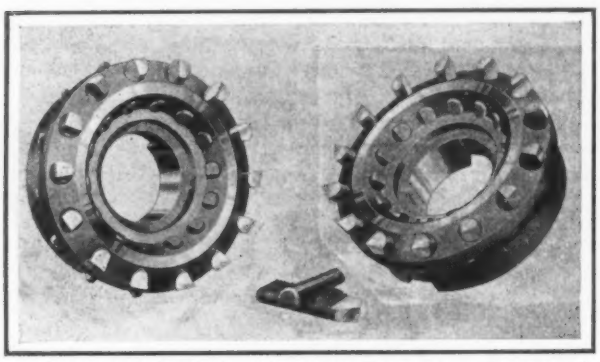
During the early days of the life of this association, some twenty years ago, the minds of many of the leaders in the industry were turned toward such technical subjects as the silicon content of pig iron, and the proper mixtures chemically for our cupolas. Wherever foundrymen congregated such subjects were in the limelight. In the minds of many these matters were not well defined. However, many of them are now clarified, and so it would be well if the same energy as was applied to those scientific considerations were now shifted to the equally baffling subject of industrial relations. This general term covers much. It runs all the way from the methods employed by your strawbosses in the handling of the most unskilled men, to the subject of the division of profits and representation of the men on our directing boards.

In conclusion, it is the belief of the speaker that you have a much stronger association than you realize and, from his recent work, it is his firm conviction that the American Foundrymen's Association is a much greater power, and has vaster opportunities, than its members, yes, perhaps its officers and directors, have realized.

Face Milling Cutters

The cutter shown in the accompanying illustration is manufactured by the Lovejoy Tool Co., Springfield, Vt. It is for face milling where the depth of the cut does not exceed 9/16 in. The teeth are positively locked, and therefore, it is claimed, there is no possibility of slipping or loosening under heavy or intermittent cuts. The teeth are made to gage and are interchangeable, a liberal amount of stock being provided for wear. The bodies are of hardened steel. Attention is directed to the ease with which the teeth can be adjusted forward to compensate for wear or replaced with new ones.

This type of body, it is pointed out, is ideal for holding stellite, and can be so equipped when desired.



Positively Locked Teeth, Adjustable Forward to Compensate for Wear or Readily Replaced, Are Features of Lovejoy Face Milling Cutters

Saving of time when grinding, it is emphasized, is a feature, as there is very little surplus stock to be removed.

The cutters are furnished in 10 sizes, ranging in diameter from 6½ to 18 in., and with number of cutters, 12 to 36.

Nomenclature of Lubricating Oils

Specifications and nomenclature of lubricating oils were discussed by William F. Parish at a convention of the Independent Oil Men's Association in Denver, Sept. 29. The paper was, in part, as follows:

Uniformity of name and classification have not been attempted by the petroleum industry as a whole with any lubricating product, excepting oils intended for lubrication of automobile motors. Oils for this service were at first made in only one grade by each manufacturer and were called by various trade-mark names. Later different grades were found necessary and the terms light and medium, then heavy and extra heavy were used. In 1916 a survey showed that more than 98 per cent of all the oil marketers in this country had adopted the light, medium and heavy nomenclature, but these names did not cover definite grades of oil, analyses showing considerable overlapping of viscosity which is the most important feature governing a recommendation of classification.

In drawing up the specifications for motor oil for the army the viscosity range for each of the various grades was limited by a War Department specification covering light, medium and heavy oil. Since the armistice these specifications have been rewritten, the final offering, April 16, 1920, being but little different from the original specifications, the range being as follows:

	Viscosity at 100 Deg. Fahr. Saybolt Universal Sec.
Extra light	140 to 160
Light	175 to 210
Medium	275 to 310
Heavy	370 to 410
Extra heavy	470 to 520

The Government specifications further carry out the general idea that oils suitable for internal combustion engine lubrication would be suitable for the lubrication of steam turbines and air compressors, that is, low in carbon and with a good emulsion test.

The present Government methods employed both by the army and navy in regard to nomenclature and classification of lubricants are sound and proper and will undoubtedly be generally followed by our great industries. There is no question but that the trend of the times is toward specifications for petroleum products.

Intrastate Rate Cases Heard

WASHINGTON, Oct. 19.—Hearings have taken place before the Interstate Commerce Commission during the past week in the intrastate rate cases. The cases heard involved primarily New York and Illinois, but the issues presented are the same as affect 17 States where State commissions have refused to increase intrastate rates to the level of the new interstate rates, as approved by the Interstate Commerce Commission. In most of the cases only passenger rates are involved, but in a few instances freight rates also are affected, State commissions having refused to grant as great a freight rate increase as the Federal commission authorized.

The question involved is whether the Interstate Commerce Commission has authority to change the entire intrastate rate structure within a State under its power to adjust a specific intrastate rate which may be discriminatory as related to interstate commerce. The railroads contend that the Interstate Commerce Commission has this power, while the State commissions which are fighting the case declare that such a construction of the act would mean the taking away of the last vestige of authority over rate making by the State commissions.

Air Moisture Separator

A device known as a moisture separator for removing moisture and dirt out of the air in plants using compressed air is being placed on the market by the Independent Pneumatic Tool Co., 600 West Jackson Boulevard, Chicago.

Separator for Removing Moisture and Dirt Out of the Air

The air enters the separators through two separate pipes, and strikes the casing or inside wall at an angle, causing the air to revolve and water and dirt fall to the bottom of the separator and drain off while the clean air passes through to the pipe line.

The moisture separator will be made in two sizes, having a capacity of 150 and 400 cu. ft. respectively.

The new additions of the St. Louis Malleable Casting Co., St. Louis, will be completed and in operation before the close of the year. They will be fitted with up-to-date machinery. The company has added a service building with showers, lockers, cafeteria, laboratory and first aid room. The company is ready to take on additional orders for delivery after Jan. 1, to the extent of 40 tons daily, and can also accept a limited tonnage for immediate production of both malleable and gray iron castings.

The Bullard Machine Tool Co. has established a products division in connection with its new plant at Bridgeport, Conn. To manufacturers having work in insufficient quantities to justify the purchase and installation of modern equipment, or who have not yet equipped a plant, the new division offers the advantages of Mult-au-matics, vertical turret lathes, Maximills, forgings, bar stock parts and gray iron castings.

How Seattle Fights Unfair Labor Unions

Associated Industries Have Already Accomplished Much for the Open Shop—Interesting Facts About the Radical Movement Last Year

(*Special Correspondence*)

SEATTLE, Oct. 16.—The whole country was startled in February, 1919, by the news that at Seattle, Wash., a general strike, or to be more specific, a "revolution" in labor had broken out, which for a short time, practically tied up tight every kind of industry in that great city, and threatened the very existence of some of these industries, and the lives of Seattle citizens as well. The strike lasted only a short time, but for three days general business was entirely suspended, street cars were stopped, and citizens were asked to remain in their homes, in order to further aid the authorities in handling the very grave situation. State troops were called out, and Seattle was for a short time practically under martial law. This strike, or labor revolution, was the culmination of a long series of preceding events and procedures in the ranks of organized labor, chiefly among which was propaganda sent out by the I. W. W., that notorious organization being very strong in numbers and influence in Seattle at that time. When the trouble started Ole Hansen was mayor of Seattle, and for a short time after the strike was under way he seemed to be either indifferent, or else unable to handle matters in such a way as the large business interests of Seattle demanded they should be handled. Mayor Hansen was visited by delegations of leading bankers and business men of Seattle, who promised him practically unlimited sums of money and their united support in putting down the strike, pointing out to him that every minute it was allowed to go on it was adding to the unenviable notoriety Seattle was getting all over the country, and also to the injury of its business interests, both large and small. The mayor quickly saw the force of the arguments of the business interests, and it is now a matter of history how quickly this strike was put down, and how many of the radical labor leaders responsible for it being called were compelled to leave Seattle, and have never returned. The terrible results that might have come had this general strike not been quickly settled were strongly impressed on the business interests of Seattle, and a short time after, or to be exact, on March 12, 1919, there was organized what is known as the Associated Industries of Seattle. Before going into detail as to the membership and functions of this organization, it will be of interest to give a *resumé* of labor conditions in Seattle at the time of the general strike in that city, in February, 1919, and the main causes that were responsible for these conditions. This is very clearly set forth in a publication issued by the Associated Industries, which reads as follows:

The Revolutionary Movement

"During the period of the European war there was a widespread revolutionary movement in the Pacific Northwest, principally under the banner of the I. W. W. The mills and the logging camps, offering employment at good wages to the itinerant worker, besides the fact that much of that employment was in camps where home life is the great exception, a field particularly adaptable to herding men of extreme and violent beliefs was presented to those whose mission in life is the attack of orderly and stable government. The radical forces in our lumber industry were in a few years organized to such an extent that at the time our country entered the war the Government found it necessary to clean them all out and to stabilize this very important industry by manning the mills and camps with law-abiding men enrolled in the Loyal Legion of Loggers and Lumbermen.

"The shipyards and subsidiary industries opening at this time, and Seattle being the largest industrial center of the Northwest, it was inevitable that when our soldier boys drove the I. W. W. from the forests, Seattle should receive a very great percentage of this most undesirable army. The three great propagating centers of the I. W. W. are New York, Chicago and Seattle. The strongholds of radicalism are in the Northern tier of States. With the exception of a little flurry in Arizona and some recent disturbances in Denver, practically all of the extreme radical organizations are confined to the States on the Northern border line. The three papers printed in English (of the 14 published by the I. W. W. executive council) are in New York, Chicago and Seattle.

"Combatting this radical element in Seattle there is just one efficient force—the Associated Industries. This organization has successfully resisted the savage attacks of this large and dangerous crowd of radicals; first, in the revolution of Feb. 4, 1919, wherein were present every thought, purpose and theory of the mobs which devastated Russia; but the radicals were cowed by the spirit of our people and the presence of soldiers, marines and machine guns."

The Associated Industries

The one man largely entitled to the credit for the organization of the Associated Industries of Seattle is Frank Waterhouse, a leading citizen of the city, and largely interested financially in some of its banks and business interests. Very soon after the settlement of the general strike Mr. Waterhouse asked a dozen or more of the leading business men of Seattle to meet him in conference, to discuss the grave labor situation that existed in the city, and to determine, if possible, whether there was not some means that could be adopted to better it, and to remove, to some extent at least, the unenviable reputation that Seattle had all over the country, for being a hotbed of radicalism, the I. W. W. and for the unfair labor attitude in the city towards its industries. This conference and others were held, and as a result, there was organized the Associated Industries of Seattle, which in an existence of less than two years, has done much to correct the undesirable labor conditions that existed when it was formed, and has also done much in other ways for the benefit of Seattle business interests.

The Associated Industries of Seattle is a corporation organized under the laws of the State of Washington providing for the organization of corporations not formed for profit.

Purposes of the Associated Industries

With its inception the organization set forth the purposes for which it was formed as follows:

1. To stimulate employers and employees to develop and maintain the best possible conditions of employment, to develop by example rather than by precept, a spirit of co-operation and fair play, and to insist that both employers and employees shall be treated justly and fairly in all matters affecting their mutual interests.

2. To substitute for individual, single-handed effort the united effort of employers and employees in dealing with the problems that affect alike all branches of industry.

3. To co-operate with all Government and other agencies for the promotion and enforcement of such industrial laws and regulations as are in accordance with the most enlightened public sentiment.

4. To initiate and advance by every legitimate means a general movement for the continuation of wise and sane government.

5. To encourage careful, and to oppose and discourage careless and extravagant expenditure of public funds.

6. To collect, receive and disburse dues from its members, as well as any gifts or devises, and to purchase, hold and convey real and personal property as the purposes of the corporation may require.

7. To enter into lawful contracts, and incur obligations essential to the transaction of its affairs for the purposes

for which it is formed; to borrow money and issue notes, bills or other evidence of indebtedness, and to mortgage its property to secure the same.

8. To do any and all things necessary or proper to carry out the foregoing purposes.

Open Shop Policy

In a recent handbook issued by the organization its attitude toward the open shop, its position in regard to a labor dispute of any kind, and finally, some of the things it stands for, are set forth as follows:

The Associated Industries started upon its active career less than two years ago. It already has a membership of about 1,800. It is a permanent institution. It has come to stay. Its only object is to secure permanent industrial peace. This can be accomplished only through gaining and maintaining the confidence of the employee as well as of the employer, and this it proposes to effect. Otherwise its organization and efforts will have been in vain.

The Associated Industries favors the American or open shop plan of employment. It does not, however, attempt to dictate to any of the trades or corporations the relations they may or may not assume with organized labor. The closed or open shop is a matter of choice of the individual or of the craft. However, whenever a craft or an individual, upon whom unjust demands have been made by organized labor, has elected to operate on the open shop basis, and has appealed to the Associated Industries for its support, it is but fair and right that the trade or individual, having enlisted the advice and assistance of the Associated Industries in its defense, should make no settlement of the controversy that is not satisfactory to the Associated Industries, as well as to the particular craft or individual. The Associated Industries will recognize no settlement which permits of a working arrangement countenancing the sympathetic strike or the right of any craft or individual to declare a strike or boycott upon any job or any material, wholly because of controversies arising between other parties or upon other jobs.

Results Secured by the Organization

The Associated Industries of Seattle is less than 18 months old, yet in that brief time it has settled satisfactorily to employer and employee all labor disputes that have come up in that time, with the exception of two, these being a strike of the bakers and musicians employed in four of the movie picture houses in Seattle. The former is likely to be settled in a very short time, while in the latter the owners of the theaters affected are indifferent about a settlement of the strike, as their profits since the strike was called have been larger than before. Among the trades in which strikes, or threatened strikes, have been settled may be mentioned the carpenters, building laborers, bricklayers, concrete men, structural steel erectors, plasterers and glaziers, printers, pressmen, press feeders and bindery workers and pile drivers. It is a notable fact that between Sept. 1, 1919, and May 1, 1920, no less than 19 strikes were called in Seattle, while between May 1 and Oct. 1, this year, not a strike has been called. The inference is obvious, and the reasons given are that due to the activities of the Associated Industries, there is now a better understanding between capital and labor in Seattle than has existed for many years. The longshoremen and water front employees generally, of whom there are many thousands in Seattle, a great center of shipping, are all working under the open shop plan, after a long strike that ended last April in their complete defeat. This is the largest industry in Seattle that has been placed on the open shop basis, and it was done with comparative ease. There are still closed shops in Seattle, but the industries here are going through a much-needed stabilization process. The radicals in the many labor unions have been curtailed of much of their former power, and many of them have left Seattle for a more congenial clime. The Associated Industries proposes to continue its policy of arbitration and conciliation in labor disputes wherever possible. It also proposes to look after the interests of the employee as well as the employer, and in more than one case it has been instrumental in securing advances in wages from employers who were underpaying their men. Professional men, chiefly doctors and lawyers, form a considerable part of the membership of the association. The presence of these professional men in this industrial organization is taken as evidence that they endorse the principles for which it stands. On the advisory committee of the association are also representatives of the general public, these being a leading minister, a former member of the Cabinet, and a noted attorney.

The Financial Support

When the Associated Industries was first organized it was seen at once that a strenuous campaign or organization and publicity, especially the latter, would be absolutely necessary, and to do this a fund of nearly $400,000 was quickly raised by the business men of Seattle who had allied themselves with the early work of the organization. This was spent in various ways, much of it in the employment of noted speakers, who were employed to offset as much as possible the effects of the propaganda that was being spread by the radical labor leaders. The association derives its regular funds by taxing each member 50 cents on each $1,000 of pay roll per year, the minimum dues in the organization being $20 per year. In addition, the association receives liberal amounts of money regularly from some of the leading Seattle banks. It has been able at all times since it was organized to promptly finance all its various campaigns. It is said that at present the annual pay roll of the Seattle industries is over $300,000,000, and of this large amount only 15 per cent has strictly closed shops. This is in sharp contrast with conditions that existed before the association was organized. Prominent Seattle industrial concerns that are active members are the Seattle Boiler Works, Standard Boiler Works, Pacific Car & Foundry Co., Seattle Chain Co., Hofius Steel & Equipment Co., Olympic Steel Works, Pacific Coast Steel Co., A. M. Castle Co., Fairbanks, Morse & Co., Link Belt Co. of Washington, and Western Gear Works. In fact, nearly all the Seattle industries are members.

The association has its headquarters in the American Bank Building, Second Avenue, Seattle, John Wallace being president and Alfred Bickford, executive secretary.

R. A. W.

Failure of the Eight-Hour Day

The National Industrial Conference Board, 10 East 39th Street, New York, has issued a report on "Problems of Labor and Industry in Germany." The report presents conditions as they have developed up to September, 1920.

As to experiences with the eight-hour day, the report says that the estalishment of an eight-hour day had long been demanded by the trade unions. On Nov. 16, 1918, a few days after the armistice, representatives of 21 of the largest employers' associations, representing almost every important industrial group, met with seven trade union federations and entered into an agreement to govern their future relations. Among the terms of this agreement was a provision for the establishment of a maximum eight-hour day with no reduction in wages. Subsequently, the eight-hour day was established by law. The results, however, were not satisfactory. On the one hand there had been difficulties in administering the law to all establishments. For example, in certain employments, such as restaurants and barber shops; in seasonal industries, in continuous industries and agriculture, it has been found practically impossible to enforce the law. Furthermore, production has not been maintained under the reduced scale of hours. The German Industrial and Trade Conference, composed of employers, reported in 1919 that estimates of the loss in production varied between 20 per cent and 50 per cent. The most reliable figures came from the coal mining industries where reduction in output was put at 40 per cent.

When the eight-hour day was introduced, it was generally regarded as inviolate by the working classes. Since that time there has been, on all sides, a growing recognition that Germany's economic re-establishment could only come through increased production of goods, so that within recent months labor has shown a willingness to work longer hours. The coal miners, who had during 1919, decided to demand a reduction of their

present seven-hour day to six, and to strike if this was refused, gave up their demand and, in addition, pledged themselves to work an extra half shift each week.

Since January, 1920, in several other industries where the eight-hour day was provided for in the wage contract, it has been agreed that wherever the eight-hour day included rest periods, these should be omitted and the actual, and not the nominal, eight-hour day is to be the standard. Moreover, the trade unions themselves, including the powerful Metal Workers' Federation, are urging increased production. The great hindrance to the adoption of a longer work day, the board reports, is the fear of organized labor that if the eight-hour day principle is relinquished even temporarily the struggle for it will have to be refought.

Youngstown Wage Distribution Record

With exception of the disbursement in January, 1919, the September wage distribution at Youngstown, Ohio, chiefly by iron and steel manufactories, of $8,522,168 was the largest in the history of the Valley. It compares with $8,324,517 paid in August and $7,972,350 in the corresponding month in 1919. It also indicates more regular operation of Valley steel plants. In the first nine months of the year district industries paid $69,171,868 in wages, as compared with $81,891,279 for 12 months of 1919 and $84,393,688 in 1918. With an average monthly payroll for the nine months of $7,685,763 the Valley wage bill is at the annual rate of $95,000,000.

Work and Compensation in 28 Selected Industries

WASHINGTON, Oct. 19.—The Department of Labor has compiled a survey of the hours of work and compensation in 28 selected industries for 1919. The figures cover only 318,946 male workers and 85,812 female employees, but the department contends that every effort was made to make the survey indicative of the general average in each industry.

In the iron and steel industry, the figures cover 31,588 male workers in blast furnaces, Bessemer converters, open-hearth furnaces, puddling mills, blooming mills, plate mills, standard rail mills, bar mills, sheet mills, and tinplate mills. The results show an average work day of 7.8 hours, with an average earning per hour worked of $0.748. Of these 31,588 employees, 5968 worked less than 4 hours per day; 1910 worked 4 hours and less than 5; 1946 worked between 5 and 6 hours; 3685 between 6 and 7 hours; 2776 between 7 and 8 hours; 2450 between 8 and 9 hours; 2599 between 9 and 10 hours; 2525 between 10 and 11 hours; 2232 between 11 and 12 hours, and 5497 worked 12 hours and over.

The survey lists a record of 159 female workers in these iron and steel mills with an average work day of 6.1 hours and an average pay of $0.419 per hour. Twenty-one of these worked less than 4 hours per day, 14 worked between 4 and 5 hours, 10 between 5 and 6 hours, 53 between 6 and 7 hours, 60 between 7 and 8 hours and only 1 between 8 and 9 hours.

In the automobile industry covered in the survey there were 17,812 male workers with an average work day of 8.2 hours and an average pay of $0.571 per hour. In this industry, 622 female employees worked an average of 7.8 hours per day with an average pay of $0.380 per hour.

In the car building industry 15,606 workers are listed with an average work day of 7.8 hours, and an average pay of $0.698 per hour. No female employees are scheduled.

In the construction of electrical machinery, 4369 male workers had an average work day of 7.9 hours, and an average earning of $0.527 per hour. In this industry 1618 female employees worked an average of 7.6 hours per day with an average pay of $0.322 per hour.

The survey lists 15,340 male workers in foundries with an average day of 8.2 hours and average pay of $0.545. It also classified 83 female workers in foundries with an average day of 7.1 hours, and an average pay of $0.333 per hour.

In the construction of machine tools, 7817 male employees worked an average day of 8.6 hours with an average earning of $0.542 per hour. In the same industry, 154 female employees had an average work day of 7.7 hours and average earning of $0.345 per hour.

In the building of other machinery, the survey covers 14,931 male workers with an average work day of 8.2 hours, and an average pay per hour worked of $0.599. No female employees are listed in this work.

Labor Conditions Improving

YOUNGSTOWN, OHIO, Oct. 16.—The labor situation in the Mahoning and Shenango valleys continues to register improvement, with encouraging increase in per capita production. Almost without exception iron and steel producers comment favorably on the labor situation. It would not be surprising if common labor were to receive a wage reduction within the next year, with corresponding cuts all along the line. Manufacturers contend pressure for lower prices many force such a wage reduction, which is expected to be nominal.

Heavy immigration is helping the common labor situation, as the immigrants are being absorbed as they come into the valleys.

Makers evince no concern over the press dispatches that the American Federation of Labor plans another organization campaign in the mills. They point out that the federation, after its recent failure, is unlikely to meet with a cordial response from the men; that employment may be more or less irregular during the next 12 months; that workmen are less disposed to push organization claims under such conditions and that public sentiment is forcibly against another labor disturbance within the industry.

As indicating the state of mind of workers in some sections, it is pointed out efforts of the Amalgamated Association of Iron, Steel and Tin Workers to organize employees of the Newton Steel Co. at Newton Falls, Ohio, have thus far proved unavailing. Despite more or less vigorous campaign measures, the men have shown little interest and have expressed a desire to be let alone.

The Newton company and the Youngstown Sheet & Tube Co. are the only sheet makers in the Youngstown district whose plants are operated on an open-shop basis.

Sivyer School of Citizenship

A school of citizenship has been founded by the Sivyer Steel Casting Co. of Milwaukee, to meet the problem presented by the inclination of foreign workmen to return to the native land after accumulating a competence by having been trained into a skilled and valuable employee. It has been determined by the Sivyer company that this inclination may best be combated by aiding and directing the worker to become a naturalized citizen of the United States.

The completion of a new three-story office building, with an assembly room 125 ft. long, at the Sivyer works, Thirty-seventh Avenue and Mitchell street, has made it possible to establish the school in connection with the plant. The first class was organized Friday, Oct. 15. Sessions will be held every Friday afternoon during the winter and spring. Thirty-five men have signed for the elementary school, teaching the rudiments of English. There are more than 20 in the class in citizenship, which instructs in American history, geography and civics.

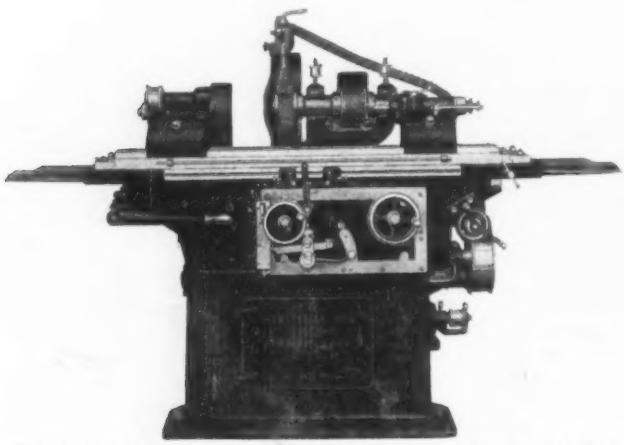
The Illinois Manufacturers' Association, at a recent meeting in Chicago, endorsed the principle of the open shop following an address by E. J. McCone, general manager, the *Buffalo Commercial*.

The Sharon, Pa., works of the Savage Arms Corporation, manufacturing automobile parts, has been indefinitely closed, affecting several hundred workmen.

Plain Cylindrical Grinding Machine

A plain manufacturing grinding machine for cylindrical grinding on centers, either straight or taper, is announced by the Webster & Perks Tool Co., Springfield, Ohio. The machine is designed to take work 6 x 30 in. but has an actual capacity for work 10¼ in. diameter by 32 in. long, and has both hand and power feed. It is provided with either overhead countershaft for suspension from the ceiling or with unit countershaft secured to the floor at the rear of the machine, eliminating all overhead work and facilitating direct connected motor drive when desired.

The table travel is automatic and is controlled by adjustable dogs secured to the edge of the table by a T-slot, with adjusting screw and lock nut for fine adjustments. Large bearing pads on the top of the table support the swivel table and eliminate vibration. The swivel table is on a steel center stud fitting in a bushing pressed into the table. An adjusting screw is provided at the right hand end for swiveling the table in either direction, with clamps at both ends; the right hand clamp is graduated in degrees and inches.



Work 10¼-In. in Diameter and 32 In. Long Can Be Handled by New Webster & Perks Cylindrical Grinding Machine

The head stock spindle is chrome-nickel steel and runs in alloy bronze bearings with provision for adjustment for wear. It is gear driven at a ratio of 2½ to 1, the gears being fully inclosed and running in oil. Either live or dead center grinding may be done, the drive pulley for dead center grinding being mounted on a double row ball bearing.

The foot stock is provided with an adjustable spring for holding the center in the work, with lever for withdrawing. It is also provided with a locking lever to hold the center rigidly. The wheel truing device is mounted on the foot stock to facilitate truing the wheel without removing the work.

The wheel stand rests on V ways and is provided with a safety gib to prevent it from raising in case of accident. The wheel spindle is chrome-nickel steel, mounted in alloy bronze bearings, and is adjustable for wear. These bearings are mounted in ball and socket type bearing housings to secure alignment.

Four variations of both table feeds and work speeds are obtained by levers in front of the machine through a quick-change gear box. In addition, a fast and slow table travel is obtained by a control lever in front of the machine, giving eight separate table feeds. A large water reservoir is provided in the base for wet grinding.

Settlement Declared Just

WASHINGTON, Oct. 19.—Charges that irregularities were involved in the settlement of war contracts with the Standard Steel Car Co. are refuted in a report submitted to Secretary of War Baker by a special committee which investigated the matter at his request. The investigation was made following charges before the House War Investigating Committee last spring.

The claims presented by the Standard Steel Car Co. following the cancellation of contracts after the signing of the armistice amounted to $6,700,000. The contract involved the manufacture of gun carriages at the Hammond, Ind., plant of the company. The Chicago district ordnance board made an agreement to settle the claim for $3,000,000, of which $800,000 represented a fixed profit for 200 Howitzer carriages which were completed, leaving a balance of $2,200,000, which represented negotiated items.

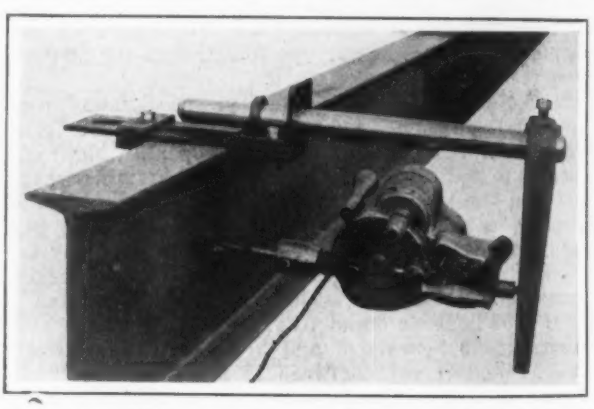
An audit of various items entering in the award was made by Ernst & Ernst, certified public accountants. This audit indicated the overpayment of $330,791.78 on certain items. The special committee held, however, that these items were more than offset by other items which were not allowed but which were allowable in a negotiated settlement. The committee holds that the settlement as a whole was to the advantage of the Government and that a reopening of the case would not be justified.

San Francisco Shipbuilding Plant for Sale

The shipbuilding plant of the Schaw-Batcher Co., South San Francisco, Cal., has been placed on sale, either as a going concern or piecemeal. Bids were received up to noon, Oct. 15. The plant was built at a cost of $1,750,000 and employed 5200 men at the height of war work. The company is owned by the Western Pipe & Steel Co., San Francisco, which also controls the Southwestern Shipbuilding Co., San Pedro, Cal. The plant on sale was designed for emergency fleet work, while the plant at San Pedro was built for permanency. Eighteen ships have been launched from the San Francisco plant.

Drop Clamp and Support for Drilling I-Beams

Increased speed in drilling I-beams, it is stated, is provided with the Canton drop clamp and support which is shown in use in the accompanying illustration. This device is intended to replace the goose-neck or "old man" commonly employed. With but one adjustment any number of holes can be drilled in the top, bottom or web of the I-beam. The manufacturer advises that 16 holes can be drilled in an I-beam in quicker time than one hole can be drilled with the goose-neck. The clamp and support are manufactured by the Poyser-Bucher Co., Canton, Ohio.



Device for Drilling in the Top, Bottom or Web of I-Beams. Speed of drilling is a feature

Canada purchased almost one-third of the total exports of tin plate, terne plate and taggers' tin from the United States during August, 1920, according to the statistics of the Bureau of Foreign and Domestic Commerce. These exports during that month aggregated 36,890,671 pounds, worth $3,061,972.

A special meeting of the Follansbee Bros. Co., Pittsburgh, has been called for Dec. 8, to consider an increase in the capital stock of the company from $4,100,000 to $11,500,000.

The Indiana Rolling Mills Co., Newcastle, Ind., has started on an addition and improvements to its plant to cost $250,000.

Electric Furnaces as Melting Mediums

Status as of Sept. 1 in the Non-Ferrous and Steel Industries—Large Expansion in the Former—Proportion Used in Foundries

BY EDWIN F. CONE

IN making an analysis of recent progress in the use of electricity as a melting medium in the non-ferrous industry, it is possible in a paper of this character, compiled only in the last few days from delayed data, to bring out only the leading facts and to present only a generalized statement. It is not deemed expedient to give detailed tables of the installations of each type of furnace. The data, however, as presented are based on information furnished by all the sellers of the various types of electric melting mediums now in use as of Sept. 1, 1920.

The last published data I know of were printed in THE IRON AGE, March 4, 1920. These showed that on March 1, 1920, there were in the United States 261 electric furnaces of all types operating or contracted for in the non-ferrous industry. The progress since then has been remarkably rapid. The compilation of the data, as of Sept. 1, reveals the striking fact that the total now in the United States and Canada is 385, or an increase of about 40 per cent in only six months.

In this almost new industry which comprises the foundry, the rolling mill and other phases, there are now 12 different furnaces as distinguished by their names. These are the Ajax-Wyatt, the Baily, the Detroit rocking, the Booth rotating, the Rennerfelt, the Snyder, the von Schlegell repelling arc, the Weeks, the Ludlum, the Greaves-Etchells, the General Electric muffled arc and the Northrup furnaces.

Taking up some of these individually, the Ajax-Wyatt, sold by the Ajax Metal Co., Philadelphia, is operating largely in the brass industry, particularly the rolling mill end of it. On March 1, 1920, this furnace was credited with 118 installations; on Sept. 1 these had expanded to 176, of which about 45 are credited to the foundry field. This is an increase of 58 in six months. Beside these, the company has contracted for four for shipment to France.

The Baily furnace, sold by the Electric Furnace Co., Alliance, Ohio, which may be credited as the pioneer in this industry, now has to its credit 76 furnaces in the United States and two in Canada, in the non-ferrous industry with five sold to foreign countries; on March 1, this year, the total was 61, or an increase of 17 in six months. In the foundry industry about 56 furnaces are operating.

Last March the Detroit rocking furnace, sold by the Detroit Electric Furnace Co., Detroit, was credited with 44 furnaces in this industry; on Sept. 1 there were 49. Besides these there is one making aluminum steel and one used in melting cast iron borings and steel scrap for piston rings in Detroit. Of the 49 Detroit furnaces about 28 are credited to the foundry end of the business. The company has also sold one to France, three to Japan and one to England.

The Booth rotating furnace interests of Chicago announce the sale of 40 furnaces as of Sept. 1, of which about 16 are in foundries; last March the total was 20.

The increase in the case of the Rennerfelt furnace installations on Sept. 1 over those in March 1 is five, the total in the United States and Canada now being 14, of which one is in Canada. Of the present total seven are credited to foundry operations. The furnace is sold by Hamilton & Hansell, Inc., New York.

The company selling the Snyder furnace or the Industrial Electric Furnace Co., Chicago, is offering the von Schlegell repelling arc furnace also. There are three of the latter in the non-ferrous industry and one making aluminum steel. There are besides this five Snyder furnaces now credited to the non-ferrous industry in the United States as against seven in March, but the total of the two types is eight. Of these five are credited to foundry operations.

The American Metallurgical Corporation, Philadelphia, is credited with one furnace, known as the Weeks. Of the distinctly steel-melting or refining types there may be mentioned the Greaves-Etchells and the Ludlum, each credited with one furnace operating in the non-ferrous industry.

The General Electric Co. has in operation or contracted for nine furnaces, known as the G. E. muffled arc furnace, of which eight are in the casting industry.

On a small scale so far as weight is concerned, there are now in use or contracted for commercial use, eight furnaces, known as the Ajax-Northrup high frequency induction furnace, of which one is making iron-nickel alloys. Besides these, there are about 20 furnaces of this type which are in use largely in laboratories, but some of which are expected later to be turned to commercial use. These 20 are not included in these statistics.

Reviewing the foregoing and expressing the analysis of the data in the form of a table, we have the following as showing the total furnaces of each type as of Sept. 1 and March 1, 1920, and an estimate of the proportion credited to the foundry industry:

	Total U. S. and Canada, Sept. 1, 1920.	Total U. S. Sept. 1, 1920.	Total Canada, Sept. 1, 1920.	Total on Mar. 1, 1920.	Credited to Foundry Industry, Sept. 1, 1920.
Ajax-Wyatt	176	176	..	118	15
Baily	78	76	2	61	56
Detroit	49	49	..	44	28
Booth	40	40	..	20	16
Rennerfelt	14	13	1	9	7
Snyder	5	5	..	7	5
Von Schlegell	3	3	..		
Weeks	1	1	..	1	1
Ludlum	1	1	..	1	..
Greaves-Etchells	1	1	..	..	..
General Electric	9	9	..	..	8
Ajax-Northrup	8	8	..	..	1
Totals	385	382	3	261	137

These data show that about 33 per cent of the total installations in the United States is credited to foundry operations. It must be remembered, however, that these figures are partly estimated because of inability to obtain exact data in all cases as to foundry as distinguished from other operations. The large majority of the foundry operations are in red and yellow brass; there are three furnaces making aluminum castings; four, phosphorbronze, and one manganese bronze.

It is interesting to compare these data with those of the steel industry. Of the total electric furnace installation in the steel industry, not including metallurgical or ferroalloy furnaces, at least 50 per cent are assigned to the foundry industry—a decided contrast.

We feel that the effort devoted to the compilation of these statistics is well repaid in the surprising showing which they reveal—an expansion in six months of

*Papers presented at the twenty-fifth general meeting of the American Foundrymen's Association at Columbus, Ohio, Oct. 4 to 8. The author is associate editor THE IRON AGE, New York.

124 furnaces or 40 per cent in an industry which is hardly more than three years old. The progress that has been made is a testimonial to the electrical engineering and metallurgical ability and initiative of the country, and is prophetic of still more valuable and interesting results to come.

Present Status in the Steel Industry

THE object of this paper is to present a general statement of the status of the electric furnace steel industry as of Sept. 1, 1920, without going into the details as to tables which THE IRON AGE brings out in its annual review number in January, and to show in particular the place the electric furnace occupies in the foundry industry. The data here presented in abstract are based on replies from all of the companies selling such furnaces except one company which could not see its way clear to furnish even a general statement. The figures for that particular type therefore stand as of Jan. 1, 1920. The paper presents a comparison of the status on Sept. 1 and Jan. 1, 1920.

The steel industry as a whole, so far as the number of furnaces installed or contracted for, has not made the phenomenal progress which has marked the non-ferrous industry. Evidently the peak in this important movement was reached during the war, and the industry may be regarded as having established itself on a sound and slowly developing basis.

According to the data referred to, there were in the United States and Canada on Jan. 1, 1920, 363 furnaces of all types installed or contracted for in the steel industry; on Sept. 1 the total was 374, or a net increase of 11 furnaces. The increase has been wholly in the United States, the total for this country now being 334 against 323 Jan. 1.

The Heroult furnace, as licensed by the United States Steel Corporation, has increased its installations in the last eight months by eight furnaces. On Jan. 1 the total in the United States and Canada was 170; on Sept. 1 the total is 178, of which 18 are in Canada. Of this total 73, or a little over 40 per cent, are credited to the casting industry. The following data, furnished by the Steel Corporation, is of interest as giving a summation of the functioning of this furnace:

Furnaces used for making ingots	103
Furnaces used for making castings	73
Total	176
Furnaces melting cold scrap	146
Furnaces refining molten metal	8
Furnaces melting or refining	14
Furnaces making malleable iron	5
Furnaces making low phosphorus iron	3
Furnaces melting ferromanganese	2
Total	178
Number of quarter-ton furnaces	1
Number of one-ton furnaces	9
Number of two-ton furnaces	22
Number of three-ton furnaces	35
Number of four-ton furnaces	2
Number of five-ton furnaces	1
Number of six-ton furnaces	93
Number of 10-ton furnaces	2
Number of 15-ton furnaces	7
Number of 25-ton furnaces	4
Number of 35-ton furnaces	2
Total	178
Total gross tons per charge	1035.25 tons
Average gross tons per charge	5.95 tons
Average net tons per charge	6.66 tons

The average charge of the 6-ton furnaces is 14,000 lb. each. This type of furnace is the only one which is operating on large quantities up to 35 tons capacity.

The Industrial Electric Furnace Co., Chicago, presents a different classification of its furnaces than formerly: Snyder, multiphase and von Schlegell repelling arc types. Of the Snyder there are now 22 in the United States and two in Canada; of the multiphase, 16 in the United States and one in Canada, and of the von Schlegell, one in the United States making aluminum steel. There are three of this latter type making non-ferrous products. The total, therefore, as of Sept. 1, is 41, of which 39 are in the United States. Of this total about 33 are credited to the foundry industry. Two furnaces are credited to Japan and one to Chile.

The Rennerfelt furnace, as sold by Hamilton & Hansell, Inc., New York, is credited with 15 furnaces in the steel industry on Sept. 1, of which about 10 are operating on castings. The company announces the development of its Rennerfelt electric reverberatory furnace.

On Jan. 1, 1920, the Greaves-Etchells furnace, as sold by the Electric Furnace Construction Co., Philadelphia, was credited with 18 furnaces in the United States and Canada; on September 1 this total had expanded to 25. Of the latter total two are credited to Canada and about 19 to the foundry industry. Three furnaces for steel castings have been sold to South America, two to companies in Buenos Ayres and one to the Chilian Naval Commission. A new electric furnace for non-ferrous products has been developed by this company.

There is one less installation credited to the Grönwall-Dixon furnace on Sept. 1, as compared with Jan. 1, the total now being 12, of which one is in Canada. Of the total six are operating in the casting industry. The John A. Crowley Co., sellers of this furnace, went into the hands of a receiver a few months ago.

The Ludlum furnace installations now number 11, or one less than in January, and of the total about five are operating on castings. The company selling this furnace, the Ludlum Electric Furnace Corporation, is operating nine special pot furnaces on metal and ferroalloys at Watervliet, N. Y., but they are not included in these statistics.

The installations of Greene electric furnaces have expanded from 11 on Jan. 1 to 18 on Sept. 1, and of these about 11 are in foundries.

Instead of four Vom Baur furnaces on Jan. 1 there are now five in the United States, all in the steel casting field. One was only recently sold to the Consolidated Steel & Foundries Co., Mexico City, Mexico, for castings.

The installations of the Moore or Pittsburgh furnace remain the same in this analysis as reported on Jan. 1, or 20. Further details are not available.

There have been no changes, so far as ascertainable, in the other types of furnaces except the addition of another Detroit furnace, sold by the Detroit Electric Furnace Co., which is operated on making cast iron piston rings for the Ford Motor Co. This brings the total to two in the United States on Sept. 1.

Segregating the foregoing analysis in the form of a table, we have the following as showing the total furnaces of each type as of Sept. 1, 1920, and Jan. 1, 1920, and an estimate of the proportion credited to the foundry industry:

	Total U. S. and Canada, Sept. 1, 1920.	Total U. S. Sept. 1, 1920.	Total Canada, Sept. 1, 1920.	Total U. S. and Canada, Jan. 1, 1920.	Credited to Foundry Industry, Sept. 1, 1920.
Heroult	178	160	18	170	78
Snyder, etc.	41	39	2	49	33
Rennerfelt	15	15	0	18	10
Greaves-Etchells	25	23	2	18	19
Grönwall-Dixon	12	11	1	13	6
Ludlum	11	11	0	12	5
Girod	5	5	0	5	0
Booth	12	12	0	12	6
Moore	20	20	0	20	15
Induction	3	3	0	3	0
Webb	2	2	0	2	0
Stassano	1	1	0	1	1
Greene	18	17	1	11	11
Vom Baur	5	5	0	4	5
Detroit	2	2	0	1	2
Special	24	8	16	24	5
Totals	374	334	40	363	196

These data, besides showing a net increase of 11 furnaces in the steel industry in eight months, also reveal the fact that a little over 50 per cent is credited to foundry operations. This estimate is not accurate, but is as near to reflecting actual relations as has been possible. Carrying the analysis a little further, it may be said that there are about 175 furnaces

making steel castings with five on malleable iron, two on aluminum steel castings, three on cast high speed tools and two on iron castings.

Contrasting the steel industry as a whole with the non-ferrous, it is surprising to find that in about three years the furnaces credited to the latter industry now exceed those credited to the steel industry. On Sept. 1 the total in the steel industry was 374 as against 385 in the non-ferrous. The percentage of the latter total in brass and other foundries is about 33, as against a foundry percentage of 50 in the steel industry.

The magnitude of the electric furnace industry, from a melting and refining viewpoint, is not realized in its entirety except by the bird's eye view which such statistics give. To be sure, they afford only the number of furnaces and not the output. A similar review of the electric non-ferrous industry shows a total of 385 furnaces of all types installed or contracted for as of Sept. 1. This total, with the 374 in the steel industry, makes the total furnaces in the two industries 759 on Sept. 1. The impressiveness of this fact is emphasized when it is recalled that on Jan. 1, 1915, there were only 43 electric steel furnaces in the United States and Canada and probably no non-ferrous furnaces. Of the 759 furnaces the United States is credited with 716. This country leads the world in this important industry, and will doubtless continue to for many years to come.

DECREASED DEMAND

Inquiry for Iron and Steel Products in Seattle District Not So Active

SEATTLE, WASH., Oct. 12.—Inquiry for iron and steel products of all kinds in the Seattle district is showing a steady decline, due to the fear of consumers and jobbers that the downward movement in prices has not yet reached bottom. The local market has been disturbed to some extent in the last few days by the free offering by a leading Eastern mill of sheared plates at 3c.; galvanized sheets, No. 28 gage, at 8c.; Bessemer black of same gage, at 6.75c., and blue annealed, at 5.25c.; all for delivery late this year, all these prices being f.o.b. at mill, taking Pittsburgh freights. Local representatives of other Eastern mills say they will have to revise recent quotations to meet these figures, if they expect to do any business.

Export inquiry for both sheets and tin plate is negligible, due almost entirely to the unfavorable financial situation in both China and Japan. Recently, a local house sold about 200 tons of galvanized sheets for shipment to Manila, P. I. at 8.75c. at Eastern mill, but it would be impossible to get any business to-day at this price. Not much betterment in new demand is looked for until the local trade is pretty well satisfied that minimum prices on steel products have been reached. The situation is likely to remain quiet until well into the new year.

The Wallace Shipyards, Ltd., North Vancouver, B. C. is the low bidder on a new passenger ship to be built for the Canadian Pacific Railroad, its bid being about $1,500,000, but the contract has not yet been let. The concern is engaged in the building of steel ships, also ship repairers, boiler makers and engineers. It owns the Wallace Foundry Co., Ltd., operating a large foundry at North Vancouver, making iron and brass castings.

George J. Mockley, owner of the South Seattle Foundry Co., Seattle, was in Milwaukee last week for the purpose of witnessing the starting up of a new foundry in that city, by the Middle States Foundry & Machine Co., of which Mr. Mockley is also the owner. This new company was organized by Mr. Mockley about a year ago, and has just finished the building of a new foundry in Milwaukee for the manufacture of light gray iron castings, up to about 20 lb., and with a daily average output of 12 tons. The main foundry building is of brick and steel, 80 x 100 ft., equipped with a 42-in. cupola. The core and cleaning rooms are contained in a brick and steel building, 25 x 80 ft. Mr. Mockley will return to Seattle about Nov. 1, to resume the active management of his foundry in this city.

Washington Engineering Sales Co. Formed

The Washington Engineering Sales Co. has just been organized by Seattle, Wash., men with offices in the Smith Building. R. J. Church has for the past seven years been general manager of the Vulcan Mfg Co. and previously was with several large contracting firms. E. I. Flateboe has been associated with the Vulcan company as chief engineer and superintendent for nine years and has had a wide experience along marine and mechanical lines, having previously been chief engineer of the old Moran company. He is an associate member of the American Society of Mechanical Engineers. H. D. Fowler is a graduate in civil engineering at the University of Washington and since leaving there has been in charge of the sales and structural department of the Vulcan plant. The new company is negotiating for a number of sales agencies with firms locally and in the East. It is the intention to handle sales for structural steel work, gray iron, steel and malleable castings, cast iron pipe, cranes and several other allied lines in steel and iron. They are also prepared to render expert advice on industrial and manufacturing problems; also to supervise and inspect along these lines as well as prepare cost data and make machine designs.

Railroads Appeal to the President

WASHINGTON, Oct. 19.—Attorney General Palmer has been requested by President Wilson to give a ruling as to whether the Treasury Department was correct in its interpretation of the transportation act provisions relating to partial settlements for accounts due the railroads under the guaranty section. The request for an opinion followed an appeal to the President by Alfred P. Thom on behalf of the railroads. Mr. Thom declared that the holding up of $400,000,000 due the railroads under the guaranty provision pending the full settlement of each claim would seriously interfere with the financial plans of the railroads in connection with the payment of back wages and the rehabilitation of the properties.

Shortage of Power for Electric Furnaces

MILWAUKEE, WIS., Oct. 16.—To conserve the supply of electric current managers of twelve electric steel foundries in Milwaukee have agreed with the Milwaukee Electric Railway & Light Co. to close down one day a week until relief is provided. The twelve electric furnace companies are the heaviest consumers of current from central station in Milwaukee. They are: Maynard Electric Steel Casting Co., Pelton Steel Co., Wehr Steel Co., Crucible Steel Casting Co., Stowell Co., Gerlinger Electric Steel Castings Co., Standard Crucible Steel Casting Co., Hercules Steel Casting Co., Milwaukee Steel Foundry Co., Sivyer Steel Casting Co., Modern Steel Casting Co. and George H. Smith Steel Casting Co.

Exports of Metal Working Machinery

WASHINGTON, Oct. 19.—England leads again in the purchase of American metal-working machinery. The Bureau of Foreign and Domestic Commerce has compiled itemized figures on the exports of various types of metal-working machinery for August, 1920, which total $2,908,493. Of this total $414,604 represents lathes, $972,247, other machine tools, $78,864 sharpening and grinding machines, and $1,242,778 "all other metal-working machinery." The exports to England aggregated $839,162, to Canada $527,622, to Japan $290,541, and to France, $259.789.

Inflation "Prosperity" in German Steel Trade

The Fall of the Mark Increases Activity and Swells Profits of Manufacturers—Coal Syndicate Operations Not a Success

(Special Correspondence)

BERLIN, GERMANY, Oct. 1.—Productive activity in the iron and steel industries in the last fortnight has been entirely under domination of the coal situation. The commercial situation again has been governed by violently moving foreign exchanges. In the coal question has been presented the socialization commission's report, which has special interest because the present organizations of the coal and iron industries are almost exactly the same, and the proposed reforms for coal may possibly later be applied to iron.

The first socialization commission appointed immediately after the revolution recommended the immediate socialization of coal. The method advised was not state ownership, which was unanimously condemned, but the transfer of privately owned mines to a publicly controlled corporation. This plan was not carried out. Instead, all privately owned mines were compulsorily fused into an all-German syndicate (the Reichskohlenverband), which sells all coal for their separate accounts. Profits are not limited, but maximum prices are fixed. This syndicate differs little, except in its greater dimensions, from the numerous coal and iron syndicates, cartels and conventions, which existed long before the war. The new feature is that above the syndicate is set the Coal Council (Reichskohlenrat), composed of representatives of coal producers, traders and consumers, with an equal number of employer and employee delegates; and this council directs higher coal policy. The Iron Industry Union (Eisenwirtschaftsbund), which came into existence last June, similarly consists of a producing and trading syndicate and a governing council.

Coal Syndicate Not a Success

In the coal branch this system has not been considered a success. The main objections are that the Coal Council has not sufficient power; and that the strong employer interests in the Syndicate can do as they like. In particular, they have forced up prices. Here they had the steady support of the employed, the condition being that the latter at the same time have their wages increased. As a result nothing is done to increase mining efficiency or to reduce production cost. These abuses—and partly the fact that the extreme Socialists pressed for more radical measures—led to coal being the first question considered by the second socialization commission which was created last spring. Two reports have been presented by this commission. The minority report, that of Karl Krautsky, Hué and eight other members, advises that all coal mines be at once, against reasonable compensation, transferred to a new public corporation called the "Kohlengemeinschaft," and that all profits henceforth go to the State.

Eventual Nationalization of Coal

The majority report, which is the work of Walther Rathenau, and among the signatories of which are Werner von Siemens and the Socialist ex-Minister of Industry, Wissell, agrees that coal must be taken out of private hands, but recommends that the process of transfer should be delayed for 30 years. In the meantime the system of varying profits should be abolished, and radical changes in the organization should be made. The coal syndicate should cease and all its executive functions be transferred to the Coal Council; so that the council would be as now general director of coal policy and at the same time active manager. The council would accept delivery from the mines of all coal produced, and sell it. Out of the proceeds the mine owners should be allowed only a fair interest. They should get, first, their production costs; second, interest on their bonded debts; third, interest on any money in the future invested in improvements or extensions sanctioned by the council; and fourth, interest on their actually invested capital. The opening of new mines should be a council monopoly. In order that the chance of gain should remain as a spur to efficiency mine owners, and with them their workmen, should be paid bounties for increasing production, or for reducing production cost. Together with the interest on bonds and invested capital, the Coal Council should pay to each mine owner an annual sum sufficient for amortization of capital, so that within a term provisionally fixed at thirty years, the "Kohlengemeinschaft" would own the mines entirely. This majority plan is as far as socialization is likely to go; but it is significant that another Government commission, appointed specially to consider methods of increasing coal output, has decided to advise "the cessation of all socialization experiments."

Advances in Metals

The fall in the mark's foreign exchange continues to foster activity in all the metal and in most other industrial branches. The dollar, which fell to 34 marks at the end of May, last week touched 68 marks; and with that copper, zinc, tin and lead have risen sharply. On Sept. 21 electrolytic copper brought 2848 marks per 100 kilograms, against 2150 marks on July 7; tin, 6300 marks against 4000 marks on July 9, and zinc, 910 marks against 600 marks on July 9.

The prices of iron and steel, having been fixed for two months by the Iron Industry Union, remain unchanged; but the rise in scrap iron, which has a free market, continues. The price at the close of last week was 1020 marks a ton against 600 marks on July 1. Speculators are trying to drive up scrap prices, but the supply is plentiful. The fixing of a legal maximum price for scrap is said to be under consideration. The agitation for an increase of the Iron Industry Union's prices of pig iron and half-finished products has found new force in the heavy mark exchange fall of the last week, as result of which ore prices must rise. At present the ore supply is plentiful. The position of the blast furnaces toward foreign creditors has markedly improved. The Stockholm *Svensk Handelstidning* reports that of the former debt of 110,000,000 Swedish crowns to the Grangesberg, the chief Swedish ore company, only between 20,000,000 and 30,000,000 crowns remain.

More Inflation Prosperity

The iron and finishing industries report an increase of orders, largely foreign, and mostly, therefore, a result of the increased buying power of foreign money, since the new mark exchange collapse. The home public is also tending to buy; and there are signs that the so-called "catastrophe boom" of last winter is being repeated. The feature of this is frantic buying by persons who expect further depreciation of the currency, and who therefore desire to lay in stocks of commodities. Being accompanied by a rapid price advance, this buying encourages mills and factories to produce. The reports now being published by iron, steel, engineering and hardware works for the financial year 1919-20 show the strong incentive to production which this unhealthy economic condition gives. Nearly all the companies report enormously increased profits and are paying much increased dividends. The Hasper Iron and Steel Works (for control of which certain interests are competing on the Berlin Bourse) declares a 20 per cent dividend against 10 per cent last year, and reports gross profits of 11,052,251 marks against last year's 5,518,355 marks. The Luther Machine & Mill-Plant Co. of Brunswick pays a dividend of 18 per cent against 8, and reports gross profits of 6,888,159 marks against 2,416,361 marks. The Bochum Cast Steel Corporation

(just now an object of fierce Bourse competition) pays 15 per cent against 5 per cent last year, and reports net profits of 17,500,000 marks, against 3,373,895 marks. These profits were earned during the great exchange drop and price advance of September, 1919, to February, 1920. The iron trade journals admit that specious prosperity of this kind is the most that can be hoped for in the coming winter. A continuing fall in mark exchange is therefore fervently desired by manufacturers who put their pocket interests above the national interest.

Active Industries

Individual industries report improvement. The Sieger-Solingen Cast Steel Co. reports that the outlook is good, and that orders are in hand for some time ahead. The Allgemeine Elektricitaets Gesellschaft reports that it has sufficient work; that the intensity of labor is increasing, though it is still behind that of 1914, and that higher dividends may be expected. The great obstacles to extending the electro-technical industry, adds this report, are the unjustified prices of certain raw and half-finished materials. Iron plates to-day cost 40 times the peace price, though none of the components in this product has had anything like so great a rise.

The Upper Silesian machine industry reports unfavorably; in particular producers complain of Czecho-Slovak competition in eastern Europe. The shipping industry is as active as the continued shortage of iron and steel permits. The Schichau yard at Elbing is building freighters on a big scale and lately launched several 2000 and 3000 ton ships. Many orders were received from Scandinavian countries at a time when the mark was still lower than now, and more in the foreign buyer's favor. The former navy works at Kiel are also very active. In recent months they have completed two 8000-ton steamers, which under the Peace Treaty go to the entente; are completing other vessels lately launched, and building large numbers of fishing vessels. This yard is also actively turning out railroad cars, electrical machines and hardware. The yard is still owned by the State; but it is run on commercial principles by the "Reichswerke Aktiengesellschaft" of Berlin, which has ordinary corporation organization. The private Germania yard at Kiel has largely been converted into a locomotive repair workshop, but it also is turning out fishing ships.

The Ministry of Industry continues its policy of cutting down the export duties first imposed on May 10. The history of this financial and commercial expedient has been unfortunate. Decided on in December last, when the low German native prices and the low mark exchange encouraged exporting at for Germany ruinously low prices, the duties were justified; and at that time all exporters could have paid them and at the same time have undersold foreign competitors. But before the late spring, when the duties were first actually imposed, home prices had risen enormously, and the mark had recovered; so that from the first exporters declared that they could not pay the duties without losing their ability to compete. Since then the duties have been cut down as a result of the exporters' agitation, but now the mark is again falling and the duties could be easily borne.

The latest list of reduced duties contains a large number of electrical articles, railroad materials and machines of many kinds. The duties on locomotives, tenders, and their parts, steam engines, turbines, motors and steam locomobiles are reduced to 3 per cent; on hot air and compressed air motors to 2 per cent; on sewing machines to 4 per cent; hydraulic presses, 2 per cent; most classes of agricultural machines, 2 per cent; cellulose-making and paper-making machinery, according to weight, 2 or 1 per cent; leather and boot machines, 3 per cent, and machine parts to 2 per cent. The export duties on airships and aeroplanes are altogether abolished.

More Industrial Concentration

The industrial concentration movement continues, and during the past fortnight has sharply affected stock prices. Control in the Maximilian Smelting Works is being fought for, among the reported buyers being the Brothers Stumm and the Brothers Roechling. The Stinnes concern is said to be buying up the Augsburg-Nuremberg Machine Co., and the Stumms, the Bösperde Rolling Mill Co. A French syndicate is negotiating for control of the Becker Steel Works in Willich. The Rhenish-Westphalian Electricity Co., a big Stinnes creation, has extensive development plans on the basis of fusion with other electrical distribution companies in the Westphalian industrial district. The company is adapting itself to brown coal fuel. The Sieger-Solingen Cast Steel Co. has decided to increase its capital by 4,100,000 marks to 8,000,000 marks.

Manganese Ore from the Caucasus

Major F. W. Pinder, commercial adviser to the British High Commissioner at Tiflis, in the Caucasus, was recently in Constantinople, and attended a meeting called by the British Chamber of Commerce in that city. According to the *Journal* of the Chamber, he was unable to report favorably of the commercial methods or the personal characteristics of the individuals who constitute the government of the new Republic of Georgia, which has been carved out of the Caucasian territories of the old Russian Empire, says the London *Ironmonger*. This would not matter greatly to the British metal trade but for the fact that among the chief products of Georgia is, or should be, manganese ore, the great mines at Tchiaturi and the shipping ports of Poti and Batum lying within the territories of the new state. The man at the head of the Georgian Ministry of Trade is Iratadze, a workman by origin and without knowledge or experience of business. He and other members of the government were very much afraid that Major Pinder would express an adverse opinion on trade conditions in Georgia when abroad, and they sent one of their number to buttonhole him on the matter at Batum on his way out. Major Pinder promised to refrain from putting in any reports to the British Board of Trade for a month, during which time he gave the Georgians a chance to organize the export of tobacco and release this product from government control and the heavy customs duties to which it was subject. The manganese industry is also completely controlled by the government, and to arrange exports is not easy. The terms are as follows: The Georgian government takes 25 per cent of all export profits, and above this 19 per cent on the total output of manganese. The Shemo, a combine of manganese producers and exporters, has lately been joined by two British firms, and it is hoped that some sort of control over the export of this product will be possible. Major Pinder's advice to all traders is to exact payment beforehand, whether from the Georgian government or from individual Georgian dealers. The system of export duties at present in force at Poti and Batum has caused almost entire cessation of shipments and has therefore defeated its own object.

More Records Broken

Ten production records were broken at the Edgar Thomson works of the Carnegie Steel Co., Braddock, Pa., during the second week of October, making a total of 19 new records up to and including Oct. 15. Total ingot production of the entire plant, the foundry output and open hearth production all reached new high record marks, while the best former daily and weekly open-hearth production records were surpassed and the present indications are that this month will set a new high monthly production record.

The electrification of steam railroads is the subject of an address to be made before the Buffalo section of the American Society of Mechanical Engineers at the University Club, that city, on the evening of Oct. 26, by S. T. Dodd of the General Electric Co. The meeting will be preceded by an informal dinner, and non-members interested are invited.

REMODELED BLAST FURNACE

How Capacity of Belfont Stack at Ironton Was Increased Two-thirds

After being out of blast for one year for improvements at the plant, the furnace of the Belfont Iron Works Co., Ironton, Ohio, was successfully blown in on Aug. 31. The original furnace was 75 ft. high with a 10 ft. hearth, 16 ft. bosh and 10 ft. stock line, and maintained an average daily production of 150 tons. Under the management of Karl Steinbacher, superintendent of the furnace plant, the old furnace had stayed in blast on one lining for eight years and five months, a record on lining that is very noteworthy.

The blast furnace was blown out on June 11, 1919, and work of dismantling was immediately started. The shell of the furnace was in excellent condition as were the foundation, columns and column base plate. After the lining was removed and the iron and steel work of the hearth and bosh was dismantled, it was found that the furnace shell and mantle required no leveling as they were substantially correct.

Both on account of the lightness of construction of bosh bands, tuyere breast reinforcement and hearth jacket, and on account of the alterations in lines of the furnace, entirely new iron and steel work was placed beneath the bosh. New 1¼-in. bosh bands were placed, these bands being rigidly supported by cast steel bosh band supports to prevent slipping of the bands. A new tuyere breast was built, consisting of a continuous ring of 1-in. steel plate with openings for eight tuyere coolers and tuyere breast plates; a new cast iron hearth jacket with cooling pipe cast in was used, this jacket being 6 in. thick, reinforced with three 1¼-in. encircling bands. The hearth jacket segments were also bolted together. This hearth jacket extends 5 ft. below the bottom of the iron notch and is bricked up solidly about the outside, only a small run-off trough for occasional waste water being provided. All water connections on hearth, tuyere breast and hearth jacket discharge into the water trough at the mantle.

A small salamander was removed and the bottom laid up with five courses of standard 18 x 9 x 4½-in. bottom block.

The cubic capacity of the furnace was slightly increased so far as this could be done without changing the mantle ring or column base plate ring. The bosh was lowered and made steeper, the batter of the inwall was increased, the hearth and bosh diameters were increased, thus giving a total capacity of furnace of 9280 cu. ft. From the center line of tuyeres to within 2 ft. of bell there are 8580 cu. ft. This is the Southern Pig Iror Association's rating basis, and on the association's 60 lb. of coke per cu. ft. capacity figure, this furnace should be capable of burning 515,000 lb. of coke per day, corresponding to a pig iron production of approximately 250 tons. The lining was Harbison-Walker make, the same brand being used as that which gave the blast campaign record.

All of the four old Whitwell stoves were dismantled and sold for scrap, with the exception of one, part of the shell of which was in good condition. This stove had the bottom course taken out, this being the weakest part of the stove. It was lowered and moved over adjacent to the furnace and converted into a dust catcher. In the place of the four old stoves there were erected two new Brassert-Jones two-pass hot blast stoves, 20 x 80 ft., having a combined heating surface of 120,000 sq. ft. These, in conjunction with a 20 x 80 ft. McClure stove, built in 1917 but never connected, gave a total of 158,000 sq. ft. of heating surface. Cambria stove brick was used. An entirely new bustle pipe and hot blast main was installed between stoves and furnace.

The stoves were equipped with mushroom type hot blast valves, Universal stove burners and Weinel chimney valves. The existing stack which originally served both stoves and boilers was made use of in the remodeling work, the two new Brassert-Jones stoves being connected to the stack by means of a new underground brick-lined concrete flue integral with the stove foundation.

The gas main system includes the new dust catcher converted from one of the old stoves. The gas is led to the boilers by means of a new overhead gas main. The gas for the stoves is taken from the boiler gas main and led to a 10 ft. Brassert washer, and by means of a new overhead gas main to the stoves. A by-pass is provided between dust catcher and stove gas main.

The new boiler plant consists of seven Stirling water tube boilers, a total capacity of 2100 boiler horsepower being provided. Four of the boilers have their breeching connection adjacent to the stove flue and discharge into it, while the other three boilers have independent stacks. This arrangement is found to be most beneficial for not only was the cost of new stacks saved but the relatively higher temperature of gases from the boilers passing into the stove flue and stack materially help draft conditions at the stoves. The boilers are all provided with Birkholz-Terbeck gas burners equipped with butterfly regulating valves and positive shut-off valve, and have standard piping equipment throughout.

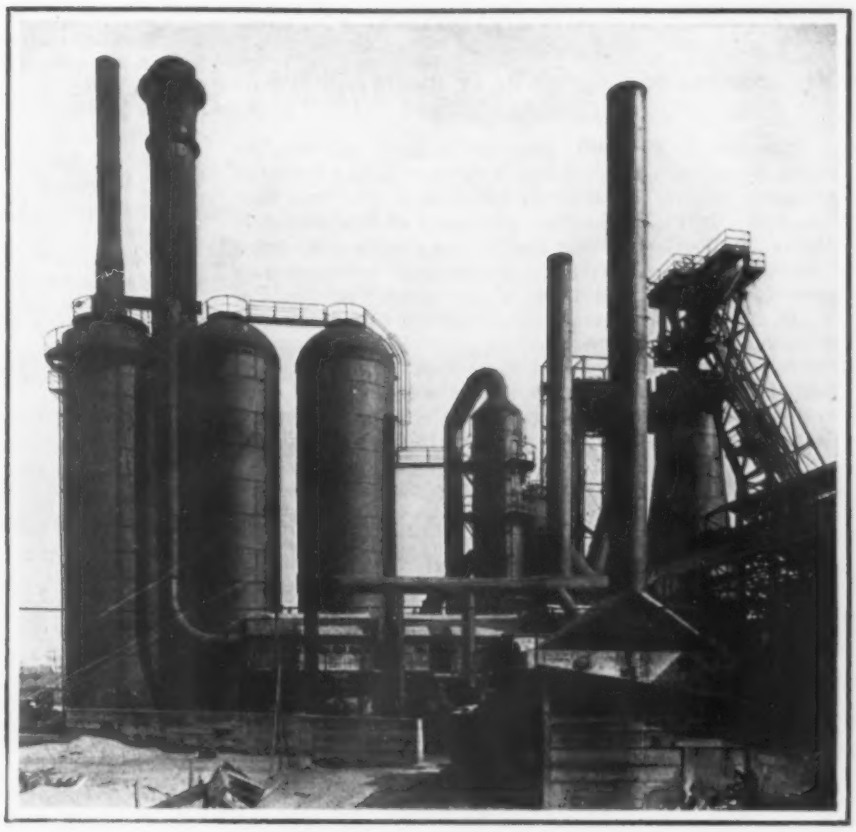
From the new stoves a cold blast main was put in, together with 20-in. by-pass valve back to a General Electric 22,000 cu. ft. capacity turboblower, with an auxiliary blast connection to the old reciprocating blowers, which are for use in an emergency. As the foundation for the air end of the blower had already been placed in the existing power house, it was decided to utilize this location and the house was extended. An extension was also made in existing power house bay, in which was placed a new 125-kw. Ridgway reciprocating direct current generator to take care of increased electrical requirements in new Wheeler condensers, pumps and new scale car.

In laying out the new water system Fairbanks-Morse pumps originally on the river bank incline were installed in the pump house. Two Worthington 2000-gal. centrifugal pumps, driven by General Electric single stage steam turbines, were installed on a new incline. These pumps deliver to a single 10 in. line running up the incline and this line is provided with three discharges, one to a double compartment reservoir, one to the furnace bosh and one to the condenser. The suction of a Wheeler condenser pump leads to each compartment of the reservoir and the discharge of these pumps was connected up so that the pumps can serve either the condenser or the furnace bosh. By means of a by-pass they can also serve the line leading to the gas washer, stoves and general wash-up hose connections. The suction of the reciprocating Fairbanks-Morse, Worthington and old McGowan pumps was also led to the double compartment reservoir with an auxiliary suction in the condenser hot well. The discharge from these pumps leads primarily to the gas washer, stoves and wash-up hose connections, but by means of auxiliary connections these pumps may also serve the furnace bosh.

In ordinary operation the river pumps discharge 1000 gal. per min. direct to the blower condenser, pumping at a head of approximately 120 ft. from river to condenser inlet. The condenser discharge water runs by means of a weir back into one of the two compartments of the reservoir, from which the boiler feed pumps and the gas washer and general service water reciprocating pumps draw their supply. The other 1000 gal. from the river pumps over and above the requirements of the condenser are discharged into the second compartment of the reservoir; from this compartment the Wheeler pumps draw their supply and pump direct to blast furnace bosh. The blast furnace bosh water is led back and discharges into the same reservoir that the condenser hot well water flows into. By means of a weir between the two compartments, should the water in the reservoir from which the furnace bosh water is pulled, become low, the large surplus of water from the other reservoir will flow into it, thus maintaining the level. Normally there is a substantial flow of cold water in the opposite direction.

Exhaust steam from the reciprocating pumps is led through a feed water heater. The generators are connected up so that their discharge can be led through to the feed water heater or to the condenser. An entire new steam line system was installed for 160 lb. pressure.

The outstanding improvements in remodeling the blast furnace of the Belfont Iron Works Co. consist in the enlargement of the furnace from 150 to 250 tons daily capacity, the provision of blowing and hot blast stove equipment to realize this capacity; the provision of stocking and charging equipment to enable stock to be fed to the furnace, with economy in labor, fast enough to maintain this capacity; the provision of mechanical slag pit arrangement to take the place of hand forking of cinder; the provision of a power house in which is concentrated all power generation and handling inclusive of reciprocating and condenser pumps, generators, blowers, skip hoist engine and steam bell operating cylinders; and finally, the cutting of a pre-existing labor force of approximately 120 men to a present labor force of approximately 80.



The present method of handling iron was left unaltered but to take care of slag two dry cinder pits were installed with a common track between them. These pits are served by a Marion revolving steam shovel, mounted on railroad wheels and equipped with standard 20 ft. boom and 1½ cu. yd. dipper. On account of the certainty of a considerable surplus of steam and at the suggestion of Mr. Steinbacher, a steam line was led from the Stirling boilers to the various working positions of the shovel and steam is furnished the engine from the gas fired boilers through flexible hose, the boiler furnished with the engine being used as a receiver separator.

The bin equipment includes one coke bin of 200 tons capacity, chuting coke direct to skip cars. The chutes are equipped with Haven type coke screens, each chute discharging into a common header that leads the coke braize to a small auxiliary skip at the bottom of the skip pit. There are two limestone bins having a total capacity of 225 tons of stone, and six ore bins having a total capacity of 1000 tons of ore. The bins were purposely made of ample capacity so that minimum labor would be required. For a 250-ton pig iron production under established operating conditions no labor will be required at the bins on night turns. The skip cars have a capacity of 2250 lb. of coke each. The old single bell top was replaced with a standard Brassert type double-bell top.

Freyn, Brassert & Co. were consulting and supervising engineers on the work. In co-operation with S. G. Gilfillan, president, and Karl Steinbacher, superintendent, of the Belfont Iron Works Co., a construction force was organized which was placed under the joint supervision of Mr. Steinbacher and W. I. Cool, resident engineer, Freyn, Brassert & Co. This construction organization was made up of the Belfont company's operating force, which took care of certain dismantling and fitting-up jobs; Hibben & Co., who fabricated and erected iron and steel work comprised in the furnace below the mantle, new bustle pipe and hot blast main, new stoves and cold blast and gas mains, including the dust catcher and gas washer; the Mt. Vernon Bridge Co., which fabricated and erected the new bins and trestle, skip incline and furnace top; F. B. Davies, who had all excavation and concrete work; Harry Wileman, who had the general contract for all brickwork in the stoves, furnace, setting of boilers and extension of power house; Charles Bick, who had in charge the erection of the Stirling boilers; and the Pittsburgh Piping & Equipment Co., which put in the new steam and water line systems and also erected the condenser and exhaust piping.

Drill Company Establishes Canadian Plant

The Detroit Twist Drill Co. has announced the establishment of a manufacturing plant in Walkerville, Ont., known as the Canadian-Detroit Twist Drill Co., for the manufacture of high-speed drills and reamers. About 30 men will be employed at the start, and the first drills are expected to be completed by Nov. 15. The officers and executives of the new company are: Muir B. Snow, president; Lewis H. Jones, vice-president; H. H. Sanger, treasurer; P. C. Hill, secretary; R. A. B. Goodman, manager; George Johnston, superintendent.

Easier Conditions in Cleveland

The labor situation in Cleveland has become much easier in the past week or two, owing to the further curtailment of plant operations, and the ranks of unemployed workmen in various trades in the metal-working field now include some of the more competent class of men. While there has been no general wage reduction the wage tendency is downward and when new men are hired they are put on lower rates than have been prevailing. Tool makers are now being hired at 75c. an hour as compared with rates ranging from 85c. to $1 that have been prevailing.

The Muncie Iron & Steel Products Co., Muncie, Ind., has been incorporated to manufacture steel bars after a process for which a patent has been granted Charles Westlake, Jr., Youngstown, Ohio, and Llewellyn Jones, Muncie. By the process, machine shop borings and turnings are hydraulically cold compressed and the resultant mass is then heated for rolling.

The C. W. Hunt Engineering Corporation has been formed with offices at 143 Liberty Street, New York, to handle all sales entailing engineering in connection with the Hunt products and all engineering services previously performed by C. W. Hunt Co., Inc.

CHANGES IN MACHINERY TRADE

Resignations of Charles E. Hildreth and Albert E. Newton

Charles E. Hildreth, general manager of the National Machine Tool Builders' Association, has resigned as president of the Whitcomb-Blaisdell Machine Tool Co., and Albert E. Newton, president of the National Metal Trades Association and of the National Machine Tool Builders' Association, has resigned as vice-president and general manager of the Reed-Prentice Co. F. O. Hoagland, recently vice-president and general manager of the Bilton Machine Tool Co., Bridgeport, Conn., has been made general manager of the Whitcomb-Blaisdell and Becker companies and will be elected general manager of the Reed-Prentice Co. at a meeting to be held in the near future. Arthur H. Reed, president of the Reed-Prentice Co. and the Becker Milling Machine Co., has made the following statement regarding the changes:

"The Whitcomb-Blaisdell Machine Tool Co., the Reed-Prentice Co., and the Becker Milling Machine Co. are largely owned and controlled by the same interests, with the result that the three companies for some time, to a large extent, have had a common management. This spring it was decided for purposes of efficiency to consolidate still further the operating management of all three plants, with the result that a centralized executive office was established at 53 Franklin Street, Boston. A new policy of direct selling for all three companies was established under the charge and control of John P. Ilsley, formerly general manager of the Becker Milling Machine Co.'s plant. Branch sales offices have been established in leading cities of the United States and a foreign sales agent has been employed for Europe. Further steps have been taken to centralize the production and manufacturing departments.

"In this connection F. O. Hoagland, until recently vice-president and general manager of the Bilton Machine Tool Co., Bridgeport, Conn., and formerly with the Pratt & Whitney Co. and the Remington Arms Co., has taken the position of general manager of the Becker Milling Machine Co. and the Whitcomb-Blaisdell Machine Tool Co.

"Mr. Newton some time ago tendered his resignation to take effect Jan. 1, 1921. Mr. Newton has many financial interests outside of his connection with the Reed-Prentice Co. He feels that those interests demand practically his entire time and in view of the plan of consolidation he suggested his own resignation. He has agreed, however, for at least until 1922 to remain with the Reed-Prentice Co. in an advisory and consulting capacity. A meeting of the directors of the Reed-Prentice Co. will be held shortly to act upon Mr. Newton's resignation and upon Mr. Hoagland's assuming the general managership of the Reed-Prentice Co.

"Mr. Hildreth offered to resign as president of the Whitcomb-Blaisdell Machine Tool Co. some time ago, in view of the consolidation in management. He was requested, however, to allow the situation to remain in *statu quo*, which he has consented to do, pending the working out of the plan for centralizing the management of the different plans. No further changes in personnel are contemplated by the management."

Gear Makers Meet Next Week

As standardization and costs are closely related, they will be the principal subjects discussed at the semi-annual meeting of the American Gear Manufacturers' Association to be held at the Lake Mohonk Mountain House, Mohonk Lake, N. Y., Oct. 27, 28 and 29. Among the speakers will be P. G. Agnew, secretary, American Engineering Standards Committee, whose subject will be "Standardization from the Point of View of the American Engineering Standards Committee"; Calvin W. Rice, secretary, American Society of Mechanical Engineers, who will speak on "Standardization"; C. L. Collens, 2d, president, Reliance Electric & Engineering Co. and a former president of the Electric Power Club, whose subject will be "Industry Organization," and Christopher Haigh, supervisor of costs, General Electric Co., who will describe the "Machine Rate Method of Distributing Expense."

At an informal banquet to be held on the evening of Oct. 28, Charles W. Woodward, vice-president, in charge of personnel for the Hydraulic Pressed Steel Co., Cleveland, will be the principal speaker of the evening, taking as his subject "The Human Element in Industry." The association is making rapid strides in standardization and has received requests from Canada, England and Australia for copies of standards and practices recommended for the gear industry.

Coal Prices Sharply Decline

PITTSBURGH, Oct. 19.—The coal market presents an excellent illustration of how uncertain news sometimes is as a price factor. General expectations were that the strike of the British coal miners would find instant reflection in higher prices for domestic fuel, but, strange to say, the market has taken a turn in the other direction. Lake coal, which recently has been selling at as high as $7.50, now is not quotable over $7, and is being offered as low as $6.50.

Indiana operators, restrained from excessive prices by the recent act of the State Legislature on intrastate business, now are seeking an outlet for their coal in other sections, and are freely offering tonnages at $4.50, mine. The Illinois operators also are anxious for business at lower prices than have recently prevailed, and illustrative of industrial conditions in and around Detroit is the report that 1000 cars of Hocking coal are on tracks there, and are being freely offered at $5 per ton.

Buffalo Plans of American Car & Foundry Co.

The New York office of the American Car and Foundry Company announces that the company's new plant now under construction in Buffalo, will involve an expenditure of $3,500,000. The plant will be used for rebuilding old steel cars with a capacity for turning out 20 to 30 cars per day. It will be equipped with the most modern machinery and labor-saving devices. There will be a number of features introduced which are entirely new and novel to the car-building industry. In addition to the new car-building plant, a modern up-to-date office building will be erected on property recently acquired across Babcock Street. The soft foundry at the Buffalo plant has been completely re-equipped and is now engaged in quantity production. The Niagara wheel department has also been brought up to a high state of efficiency.

At Depew, during the World's War, the company was the largest producer of 155 mm. shells. Immediately following the armistice, the entire Depew plant was reconstructed and is now capable of building 20 cars per day. E. G. Englehart is assistant district manager at Depew in charge of the company's operations at that point, reporting to Mr. Gairns.

The company also announces that as a part of its plan of extension in the Buffalo district, W. H. Sanford, for many years district manager of its Buffalo plants, has been appointed assistant vice-president and would be placed in charge of sales in this vicinity. This appointment is in line with the company's policy of internal promotion. Prior to the formation of the American Car & Foundry Co., Mr. Sanford was employed by the Union Car Co. When that company was absorbed he was appointed paymaster and cashier at the Depew plant. In 1902 he was appointed local auditor of the Buffalo district followed by promotion to the position of resident representative. Later, in 1912, he was made district manager in charge of the Depew as well as the Buffalo plants.

Mr. Sanford will be succeeded as district manager by Andrew H. Gairns, now occupying a similar position with the company in Chicago. He will direct the operation of the new plant in Buffalo, the foundries located there, and the plant at Depew.

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Deflation and Credits

The process of deflation is full of conflict. Diverse interests are in collision. Just as some European bankers have argued that American financiers could remedy many of the evils of adverse exchange, there are those at home who make the mistake of calling for credit manipulation to hold up prices.

Throughout the cotton belt there is complaint such as has never before been heard from that section. It is directed specifically against what is called the Federal Reserve Board's "policy of deflation," and personalities are being indulged in that would disgrace even a political campaign. The statements of the cotton farmers differ greatly as to what is being done to them and what they themselves would like to do. The situation appears to be, however, that with a very poor market for cotton at present, the growers feel that they are entitled to such an amount of credit as will enable them to hold their cotton for a better market and that the Federal Reserve Board does not countenance giving them this amount of credit.

The procedure of the cotton growers, as of some Western wheat growers, is to attack price deflation and then attack the board as being a proponent of deflation. The board might well rejoin, "You do us too much honor." Illustrative of this disposition to connect the board with the fall in prices that is now occurring is the specific reference of one of the Southern critics to the decline in automobile prices as due to automobile manufacturers' dumping their product to avoid bankruptcy!

It is idle to maintain that it was necessary for the good of the country as a whole that prices in general should stay up indefinitely. By the laws of trade, which are based in part upon the manner in which men's minds work, it was certain when prices started to advance that they would advance to a level which could not be maintained. The only question was how they would fall. A sudden fall would involve a crisis, and the general policy of the Federal Reserve Board was that of using its power for the purpose of averting a crisis.

The cotton growers have the misfortune to be engaged in an industry that produces once a year instead of continuously. The blast furnace produces pig iron every day that it operates and ships its product daily if it has a market on that day. The producer of a seasonal crop that matures at this time has not benefited by the good times that have prevailed hitherto. His crop comes in at a bad time. Often it comes in at a good time. That is one of the chances that go with the business.

In the complaints made by the cotton growers the argument recurs that the economics of the situation demand heavy production, hence encouragement to high prices for cotton should be given. The argument is entirely misapplied. For what purpose has heavy production been urged as an economic remedy except that prices may be brought down? While that in itself is sufficient rejoinder, the fallacy of the argument may be seen from an entirely different angle. What is one man's finished product is another man's raw material. Suppose the Connellsville coke operator should claim, as he has no thought of claiming, that it is good for the country that coke should be selling at 20 times the price it brought in 1894, because that "tends to stimulate production." The blast furnaceman would rejoin that the high price of coke is retarding production, i.e., production of pig iron. He might add that high prices for pig iron "stimulate production," whereat the foundryman would remark that high-priced pig iron is discouraging the production of castings.

Nothing is clearer than that declines in commodity prices had become inevitable. The Federal Reserve Board may have prevented prices from reaching as high a peak as they otherwise would, but by the extent that it did so it has tempered the rate of decline. The thing had run its course. In time to come when conditions have become stabilized, the year and a half after the armistice will be remembered by many as a nightmare, when

men who wished to do constructive things were held as by an incubus.

Price Guarantees

In the matter of the Federal Trade Commission's "trade practice submittal" on the subject of price guarantees it is plain that if any conclusions are reached they will have to be reached by the commission outlining a doctrine from the ground up. Nothing has been submitted to it that would form a comprehensive basis, each trade or interest having presented the matter solely from its own viewpoint. Those who give guarantees argue that the practice is good. Those who refuse to give guarantees argue that the practice is bad. Those who have taken no position argue the question whether they would be benefited or injured. Certain wholesalers, to be specific, favor the giving of guarantees by those from whom they buy, while some retailers have argued that their business is injured by the wholesalers from whom they buy having been given guarantees by the manufacturer.

The difficulty is that this matter of guarantees is a very broad one. In one trade the guarantee under consideration is totally different from that which another trade has in mind. There may be a guarantee upon goods that have been delivered and paid for; in that case a rebate would be involved. Another class is that of goods delivered but not paid for, the transaction being akin to that of the goods being held on consignment. Next is the case of goods manufactured to the customer's specifications but not shipped. Then there is the case in which the buyer has filed definite specifications in accordance with his particular requirements, but the goods have not been manufactured. Finally there is the contract against which the buyer has not yet specified, and in such case the seller is unable to manufacture the goods and then demand their acceptance.

Illustrative of the divergence in position, representatives of the sheet and tin plate industries testified that they had no price guarantee in their lines, for the specific reason that the guarantee had been driven out six or seven years ago. The guarantee they referred to, however, was not a guarantee involving price declines after the goods had been shipped, hence no rebating was involved. In another line of business the guarantee under consideration may be one involving rebates, upon goods not merely shipped or received, but actually paid for.

How the Federal Trade Commission can develop one general doctrine to apply to a matter so divergent in character in different lines of industry is difficult to conceive. There is usually a reason for things, and it is therefore important to note that these divergences exist. Why did not the merchant steel bar manufacturers get into the habit of guaranteeing bar prices to the agricultural implement manufacturer up to the time that the farmer paid for the implement? Why did not the patent medicine manufacturer limit his guarantee to unspecified portions of the contract with the wholesale druggist?

Coming home to the steel industry, another interesting question is presented. It was stated to the commission that the sheet and tin plate manufacturers had abolished the guarantee six or seven years ago. Probably no one will dispute that prior to that time there was a practice common to the sheet, tin plate and several other branches of the finished steel trade, and that whatever was abolished in the sheet and tin plate branches of the steel trade still survives in the other branches. If the trade commission formulates a general doctrine the sheet and tin plate testimony will be of no avail or these other manufacturers will be in the wrong under the doctrine.

The trade commission, however, does not need to lay down the precept that all forms of price guarantee, or any particular forms of price guarantee are undesirable. Instead it may lay down the rule that "by their fruits ye shall know them." It may assert, for instance, that if in any individual industry it finds that the giving of the particular price guarantee involved is undesirable from the standpoint of the seller, or from the standpoint of the buyer, it will call upon the trade involved to abolish the practice. Whether the commission legally could enforce such a ruling would remain to be seen, but the ruling presumably would have a certain moral effect.

Coal Strikes and Industry

The magnitude of the British foreign trade in coal gives some measure of the dislocation to be expected from the British miners' strike which began Monday. In 1913, under normal conditions, British coal exports amounted to 73,400,100 gross tons, or about 25 per cent of the country's production. In addition 21,000,000 tons was shipped for the use of steamers in foreign trade. In 1918 the exports were 31,752,900 tons, or about one-seventh of the total output, with 8,756,470 tons used in foreign trade vessels. By contrast, in 1913 the coal exports of the United States were 22,141,140 tons out of a production of 569,960,000 tons, with 4,400,520 tons used in vessels engaged in foreign trade. As a result, in part, of the falling off in British output and exports the American exports of coal have increased from 1,845,095 tons per month in 1913 to 2,604,866 tons per month this year up to Aug. 1.

The suspension of coal production in Great Britain, even for a short period, is a most serious matter not only for British industry but for that of other countries. The effects are easily deducible, especially in view of the destruction of French and Belgian mines in the war. To the steel industry the withholding of coal means paralysis. The world needs steel and pig iron, and in no country has the pre-war rate of production been approached or exceeded except in the United States. Even in this country the coal problem is a serious one, industrially and otherwise, and now comes the menace of a more serious shortage in Europe. In his forceful way Galsworthy has written of the plight of Great Britain:

> There is going on in this country a great hub-bub concerning coal production, nationalization of mines and so forth. Only a bewildered pelican here and there croaks of the need to concentrate national attention on

chaining the tides and using water-driven electricity, on opening up oil deposits and abolishing altogether the need for coal. Coal is a curse, if there is any way of doing without. It has done more to destroy health and happiness than any of our great discoveries.

The world's salvation will yet depend in a way now little appreciated upon the utilization of waterways which to-day represent so much wasted power. The possibilities of the proper use of white coal have been made a matter of paramount importance by the repeated threats of coal famine in the past five years. Immeasurble help, moreover, has been given by the folly of the miners' unions to the super-power plan for the industries and railroads of the Northeast Atlantic seaboard and to every proposal for the application of electricity wherever economically possible. Electrification of railroads and coal conservation in industry are thus the foremost among the economic problems that must be dealt with in the reconstruction period.

Electric Furnace Progress

The use of electric furnaces for melting and refining continues to expand. According to data on other pages, this is particularly true in the non-ferrous metal industries. In a period of only six months, or from March to September of this year, the number of furnaces installed or contracted for at such works in the United States and Canada increased from 261 to 385, or by 47.5 per cent. Such an increase is remarkable in a movement spread over only about three years. There are now more single furnaces in the non-ferrous than in the steel industry—385 as compared with 374. It is of interest to note that in the non-ferrous industry about 33 per cent of the furnaces are engaged in foundry operations, as against 50 per cent in the steel industry. It was in the steel foundry that the electric furnace gained its first foothold in American steel making.

While electric steel making has passed through the stage of spectacular development, this is probably not true of the non-ferrous field. It is evident at the same time that the use of electricity is about to take a wider range in the steel industry. Further, the results already obtained in the production of electric iron castings give promise of a wide application in the future. Still more interesting are current developments in the application of the electric furnace to the chemical industry. Already some chemical reactions that have depended on coal or other fuel are being commercially and successfully carried out in special electric furnaces. A wider use is predicted for electricity in industrial chemistry, with results that will be surprising as they develop.

Arthur G. McKee & Co., engineers, Cleveland, are designing a continuous oil-fired heating furnace for the Utah Steel Corporation, Midvale, Utah. The McKee company has recently taken an order for a Kling goggle valve for the Bengal Iron & Steel Co., Calcutta, India, to be installed in connection with a Kling-Weidlein gas cleaner which the McKee firm is installing in connection with a blast furnace at that plant.

CORRESPONDENCE

Creeping of Railroad Rails

To the Editor:—There is about to be issued by the American Society of Civil Engineers a paper of mine, entitled "The Creeping of Railroad Rails." It consists mainly of a compendium of information received through questionnaire from over 100 of the highest authorities on the subject in North America. I greatly desire to have this paper thoroughly discussed; hence, if any railroad man who wishes to discuss it will write me to that effect, I shall send him an advance copy, provided that his letter reaches me before my supply of copies is exhausted.

J. A. L. WADDELL,
Consulting Engineer.

35 Nassau Street, New York.

The Iron Age and Its Readers

The readjustment going on in the iron and steel trade focuses attention more closely than ever on the weekly markets reviews of THE IRON AGE. There are reports each week from ten or more market and steel manufacturing centers in the United States, together with regular letters from England, France, Belgium, Germany and other steel-producing countries in Europe. THE IRON AGE, containing the latest market developments, is in the mails only a few hours after reports from Pittsburgh, Chicago, Cleveland, Philadelphia and other centers have been written. In no industry is such comprehensive and rapid reporting of market news duplicated.

This comprehensive reporting system is not confined to the markets. For example, the convention of the American Foundrymen's Association at Columbus, Ohio, the week of Oct. 4 was "covered" by several editorial men so that no detail of importance would be neglected. The mass of material presented at the convention if published in full would have filled many pages, but it was boiled down so that the busy reader of the issue of Oct. 14 could review the sessions without waste of time. And then a part of the report had to be carried over to this issue.

American Iron and Steel Institute Meeting

The outlook is that there will be a very large attendance at the meeting of the American Iron and Steel Institute, to be held in the Hotel Commodore, New York, Friday of this week. Judge Gary, in his address as president, will review conditions in Belgium and France, and also is expected to discuss business conditions in this country. It is not known whether he will bring up for formal action the invitation extended by leaders of French iron and steel industries to American iron and steel manufacturers to visit France in 1921. It is probable that the paper on "Thrift in Coal," by George Otis Smith, director United States Geological Survey, will be presented at the dinner in the evening, instead of at the morning session, as indicated by the program of the meeting.

The American Brake Shoe & Foundry Co. has distributed insurance policies among the employees of its Chicago plants as a recognition of their loyalty and faithful service. Employees are insured at the expense of the company in amounts ranging from $500 for those employed six months to $2000 for those employed ten years or more. The insurance continues in effect as long as an employee remains in the service of the company.

HANNA FURNACE CO.

New Organization Formed by Cleveland Firm With Assets Exceeding $19,000,000

Three blast furnace companies and one ore mining company controlled by M. A. Hanna & Co., Cleveland, have been consolidated in a new corporation under the name of the Hanna Furnace Co. These companies include the Detroit Iron & Steel Co., with two furnaces at Detroit, the United Iron & Steel Co., owning the Fannie furnace at West Middlesex, Pa., and Cherry Valley furnace and 204 beehive coke ovens and coal property at Leetonia, Ohio, the Penn Iron & Coal Co., owning the Dover furnace and a by-product coke plant at Dover, Ohio, and the Hollister Mining Co., operating mines on the Menominee Range near Crystal Falls, Mich.

The consolidation will also include, under a lease, the properties of the Buffalo Union Furnace Co., Buffalo. M. A. Hanna & Co. made a new lease of this company's property July 1, last, as a part of the plan to merge its various furnace interests in one company, and this lease, which will be turned over to the new furnace company, included the working capital and investments of the Buffalo Union Furnace Co. The lease of the Buffalo Union Furnace Co.'s properties is for a period of 40 years, with an option to purchase at a fixed sum at any time after 20 years. The properties under this lease include the three Buffalo furnaces, water frontage, docks, etc., and a half interest in the Donner Union Coke Corporation, which has purchased from the Government a coke oven plant of the most modern type, having 150 Koppers by-product ovens.

The Hollister Mining Co., has two operating mines capable of producing over 500,000 tons of ore per year and undeveloped ore reserves, all under lease on a royalty basis. The output of these mines is said to be sufficient to assure the new corporation its requirements in high phosphorus ore for many years.

The Hanna Furnace Co. starts its existence with eight blast furnaces having a combined capacity of from 900,000 to 1,000,000 tons of pig iron a year. It will own ore reserves supplying 50 per cent of its annual requirements at cost and will manufacture, or have under favorable long term contracts, 75 per cent of its coke requirements.

The Hanna Furnace Co. was recently incorporated in Delaware. Its total assets are placed at $19,466,662, these being the combined book values of the constituent companies on June 30, 1920 and not representing the present values of physical assets. These include property and equipment, $7,574,149; investments in ore mining, vessel, coke companies, etc., $3,554,079; current assets, $8,338,433. It has $750,000 in cumulative preferred stock and 189,500 shares of nominal par value common stock, the common stock being given a value of $10,720,935, based on the book values of the stock of the constituent companies.

The new board of directors is made up of members of the boards of directors of the consolidated companies. The board consists of: M. Andrews, H. M. Hanna, Jr., F. B. Richards, L. C. Hanna, Jr., R. F. Grant and R. E. McMahon, Cleveland; E. N. Ohl, Pittsburgh; George A. Baird, Chicago; A. C. O'Connor and W. B. Cady, Detroit, and C. A. Collins, Buffalo. The officers are as follows: M. Andrews, chairman of the board; H. M. Hanna, Jr., president; F. B. Richards, L. C. Hanna, Jr., R. F. Grant, and C. A. Collins, vice-presidents; George M. Humphrey, secretary; C. N. Osborne, treasurer.

As organized, the new company will have the benefit of the same executive management, operating supervision and sales organization that have served each of the consolidating companies. It is also expected that the new organization will effect economy in distribution and a saving in freights, impossible to each of the separate companies, and a substantial saving to stockholders at times when it is necessary to put furnaces out of blast, either for relining or through the lack of business.

The relations between M. A. Hanna & Co. and the Hanna Furnace Co. will be the same as they have been between the Hanna firm and the consolidated companies. M. A. Hanna & Co. will continue to act as exclusive sales agents for the various furnaces operated by the Hanna Furnace Co., and will sell the output of these furnaces from their present branch sales offices in Buffalo, Toronto, Detroit, Cincinnati and Pittsburgh.

Regulations as to Use of Open Top Cars

WASHINGTON, Oct. 19.—Regulations under which permits will be issued for the transportation of freight other than coal in open top cars have been issued by the car service division of the American Railway Association. The new permits, which are authorized by Service Order No. 20, issued Oct. 8 by the Interstate Commerce Commission, will be effective for 30-day periods only.

Among the rules laid down are the following:

"No permit will be issued for roadway material unless accompanied by a statement from the Bureau of Public Roads to the effect that the work is essential to the interest and welfare of the public.

"No permit will be issued for industrial, municipal, Federal or railroad projects unless such permit is accompanied by a statement from either a representative of the Interstate Commerce Commission or the car service division who has personally investigated the project and finds that it is an emergency proposition and in the interest and welfare of the public to grant it."

Ford Official Says Price Revisions Have Been Granted

DETROIT, Oct. 18.—It was announced during the last week by an official of the purchasing department of the Ford Motor Co., Detroit, that not a single supplier of materials or parts manufacturer with whom the company is doing business has refused to cut existing contract prices. The official added that price reductions already recorded range from 10 to 20 per cent.

"I am not at liberty to reveal the names of concerns which have reduced their prices," said the Ford official. "Such a detailed statement might be construed as a breach of faith. I am willing to say, however, that every cut affects contracts that were signed months ago. Every big supply house and parts manufacturer with whom we do business has aligned itself with us in this movement to bring manufacturing conditions and costs back to normal.

"Losses must be accepted on present inventories. The firms with which we do business are willing to share such losses with us, because the ultimate goal is worth striving for. When the Ford company goes on the market for its 1921 materials and parts, and starts signing new contracts in January, I expect to see further declines. I expect to see material and parts prices down from 20 to 35 per cent by the first of the year."

Some Improvement in Fabricating Trade

The volume of bridge and building structural steel work put under contract in September shows an improvement of 7½ per cent over the August amount, the total of September being 77,700 tons against 72,200 tons for August. These figures are from the records of the Bridge Builders and Structural Society collected by George E. Gifford, its secretary. Expressed in percentages, 43 per cent of the entire capacity of the bridge and structural shops of the country was put under contract in September and 40 per cent in August.

The total business for the third quarter was about 240,000 tons and for the first half of the year 780,000 tons, or somewhat over 1,000,000 tons for the nine months of the year. The total annual capacity is about 2,150,000 tons.

A bronze bust of George Westinghouse, inventor, has been installed in a conspicuous location in the McKinley Memorial Building, Niles, Ohio, where busts and tablets of a number of industrial and financial leaders have been placed.

Iron and Steel Markets

FURTHER READJUSTMENT

Prices Yielding and Output Is Curtailed

A Reduction of $2 in Coke the Most Significant Change of the Week

The movement toward lower prices for pig iron and the products of independent steel mills is more rapid and there are more shutdowns and curtailments of production. Signs now point to a decline in both pig iron and steel ingot output in October, though an increase was indicated as the month came in.

An Eastern steel company has just blown out four blast furnaces, and at a Western Pennsylvania independent steel plant operations are at 60 per cent, as against 80 per cent only recently. In the Central West several of the smaller steel companies have cut down output and the holding up of shipments on high-priced contracts is more common. At Pittsburgh a leading independent company has a number of open-hearth furnaces down and is restricting rolling operations, particularly in plates. A Chicago district plate mill is still out of commission.

The most significant development of the week is a break in coke which apparently marks the end of the extreme prices that have ruled for months. With a decline of $2 per ton in the week and both blast furnace and foundry operations on a diminishing scale, considerable contract coke being released meanwhile, buyers once more have something to say in that market.

The efforts of the Ford Motor Co. for a revision of its contracts on cold finished steel bars have met with fair success, and it is expecting concessions from the strip steel makers, but independent sheet makers have not been willing to revise their prices to the Steel Corporation level.

In finished steel, with the exception of pipe, the market is now more favorable to buyers than was the case in September. New business going on the books of steel companies is small in comparison with shipments, though one or two independent companies up to the end of September were taking on nearly half as much as they shipped.

The belief that activity will succeed the present hesitation early in the new year is prompting the policy in some cases of adjusting operations for the time being to the limited demand, without pressing for new business. Meanwhile concessions are largely confined to the smaller mills.

On a Standard Oil Co. inquiry for plates in the Eastern market quotations of 3.25c. and 3c., Pittsburgh, were made, the former price, which is that of the larger independent producers, predominating. Yet on some Western business a quotation of 2.75c. on universal plates has come out.

Standard section rails have been sold by an independent mill at $62.50. Rail makers believe they will get their usual proportionate awards from the railroads, even though prices may differ. The expected advance in the Steel Corporation rail price, regarded as justified by the freight advances alone, is treated as apart from the influences affecting the general consumer.

Two large consumers of tin plate on the Pacific Coast, one at Seattle and the other at Vancouver, have been covered for their first half of 1921 needs by the American Sheet & Tin Plate Co. at that company's maintained $7 basis.

American sheet bars have been offered in England at £15 per ton ($51 at to-day's exchange) and £6 under the new and reduced Welsh price. Belgian billets have sold at an equivalent of $55 against a British price of $70. The coal strike has shut down many blast furnaces and steel plants and trading is now suspended. A Norwegian shipping line has canceled an order for four ships to be built in British yards.

Reselling of pig iron has been an even more important feature of the market than during the preceding week. While for the most part the iron sold by foundries has not been in large tonnages, one lot of 3000 tons and another of 2000 tons were sold in Michigan for October delivery at $3 below the furnace price, while in other parts of the country resales were made at fully as low prices. The basic market is in an unsettled condition with resales being made at low prices. One Ohio steel company has offered to sell basic at $43 and Bessemer is obtainable at $47, Valley. Furnaces are holding with considerable firmness to recent quotations and it is pointed out that stocks of merchant furnaces amount to only about 190,000 tons. Yet foundries having $30 iron coming to them on contract find the margin on resale attractive even at liberal concession.

Manganese ore has sold as low as 53c. per unit, which compares with 65c. several weeks ago. Offers of 42c. per unit have been declined. Resales of ferromanganese have been made at $155, seaboard.

Pittsburgh

PITTSBURGH, Oct. 19.

The outstanding feature in the iron and steel situation is a break in the price of coke which has the appearance of marking the end of the extremely high prices which have ruled for some time for that product. There has been a break of approximately $2 per ton in the market since a week ago, and with both blast furnace and foundry operations on a diminishing scale and considerable contract tonnage being released, buyers once more have much to say on prices. Almost nothing has been going on in pig iron lately, but the undertone of the market distinctly is weak and with the steel making grades being offered at well below recent quotations, and no takers, a reduction in quotations to the figures named by producers at which they are willing to sell appears justified.

Out of a maze of conflicting testimony a reduction in the prices on bars, plates and shapes to 3c. for all three commodities appears warranted. Cancellations are observed of bar tonnages placed at 3.25c., and public quotations on plates and shapes have little relation to actual selling prices when inquiries appear upon the market.

Although independent sheet makers are resisting

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 19, 1920	Oct. 12, 1920	Sept. 21, 1920	Oct. 21, 1919
No. 2X, Philadelphia‡	*$51.54*	$53.51	$53.51	$32.10
No. 2, Valley furnace†	47.00	47.00	50.00	26.75
No. 2 Southern, Cin'ti†	46.50	46.50	46.50	31.60
No. 2, Birmingham, Ala.†	42.00	42.00	42.00	28.00
No. 2 foundry, Chicago*	*43.00*	46.00	46.00	28.75
Basic, del'd, eastern Pa.	51.26	51.26	51.26	28.00
Basic, Valley furnace	*43.00*	46.00	48.50	25.75
Bessemer, Pittsburgh	*48.96*	50.46	50.46	29.35
Malleable, Chicago*	46.50	46.50	46.50	27.25
Malleable, Valley	50.00	50.00	50.00	27.25
Gray forge, Pittsburgh	47.96	47.96	50.96	27.15
L. S. charcoal, Chicago	58.50	58.50	58.50	32.75
Ferromanganese, Atl. port.	170.00	170.00	170.00	100.00

Rails, Billets, Etc., Per Gross Ton:				
Bess. rails, heavy at mill	$55.00	$55.00	$55.00	$45.00
O.-h. rails, heavy, at mill	57.00	57.00	57.00	47.00
Bess. billets, Pittsburgh	55.00	55.00	60.00	38.50
O.-h. billets, Pittsburgh	55.00	55.00	60.00	38.50
O.-h. sheet bars, P'gh	62.50	62.50	67.50	42.00
Forging billets, base, P'gh.	70.00	70.00	75.00	51.00
O.-h. billets, Phila.	60.74	60.74	65.74	45.50
Wire rod, Pittsburgh	75.00	75.00	75.00	52.00

Finished Iron and Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	4.85	4.85	4.85	2.745
Iron bars, Pittsburgh	4.75	4.75	4.75	2.75
Iron bars, Chicago	3.75	3.75	3.75	2.62
Steel bars, Pittsburgh	*3.00*	3.25	3.25	2.35
Steel bars, New York	3.63	3.63	4.13	2.62
Tank plates, Pittsburgh	*3.00*	3.25	3.25	2.65
Tank plates, New York	*3.38*	3.63	3.63	2.92
Beams, etc., Pittsburgh	*3.00*	3.10	3.10	2.45
Beams, etc., New York	3.48	3.48	3.48	2.72
Skelp, grooved steel, P'gh.	3.25	3.25	3.25	2.45
Skelp, sheared steel, P'gh.	3.50	3.50	3.50	2.65
Steel hoops, Pittsburgh	5.00	5.00	5.50	3.05

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Oct. 19, 1920 Cents	Oct. 12, 1920 Cents	Sept. 21, 1920 Cents	Oct. 21, 1919 Cents
Sheets, black, No. 28, P'gh.	6.75	6.75	7.50	4.35
Sheets, galv., No. 28, Pgh.	8.25	8.25	9.00	5.70
Sheets, blue an'l'd, 9&10.	5.00	5.00	5.50	3.25
Wire nails, Pittsburgh	4.25	4.25	4.25	3.55
Plain wire, Pittsburgh	3.75	3.75	3.75	3.00
Barbed wire, galv., P'gh.	4.45	4.45	4.45	4.10
Tin plate, 100-lb. box, Pgh.	$8.50	$8.50	$9.00	$7.00

Old Material, Per Gross Ton:				
Carwheels, Chicago	$36.00	$36.00	$37.00	$24.50
Carwheels, Philadelphia	*40.00*	41.00	43.00	24.50
Heavy steel scrap, P'gh.	28.00	28.00	28.50	19.00
Heavy steel scrap, Phila.	23.00	23.00	25.50	19.00
Heavy steel scrap, Ch'go	*20.50*	22.00	24.50	17.50
No. 1 cast, Pittsburgh	40.00	40.00	42.00	24.00
No. 1 cast, Philadelphia	39.00	39.00	40.00	25.00
No. 1 cast, Ch'go (net ton)	*28.00*	29.00	33.50	25.00
No. 1 RR. wrot, Phila.	*$28.00*	31.00	34.00	27.00
No. 1 RR. wrot, Ch'go (net)	20.00	20.00	23.50	19.50

Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	*$15.50*	$17.00	$16.50	$4.35
Furnace coke, future	14.00	14.00	14.00	5.00
Foundry coke, prompt	*16.50*	18.00	17.50	6.00
Foundry coke, future	14.00	14.00	14.00	5.75

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	*16.00*	17.50	18.75	22.25
Electrolytic copper, N. Y.	*16.00*	17.50	18.75	21.75
Zinc, St. Louis	*7.25*	7.375	7.80	7.75
Zinc, New York	7.50	7.50	7.80	8.10
Lead, St. Louis	*7.00*	7.375	8.25	6.25
Lead, New York	*7.25*	7.50	8.00	6.50
Tin, New York	*38.25*	41.50	44.00	56.50
Antimony (Asiatic), N. Y.	*6.50*	7.00	7.12½	8.625

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

demands of the Ford Motor Co. for a revision of contracts carrying prices in excess of the Steel Corporation levels, that company has had a fair measure of success with makers of cold-finished steel bars and appears to be in a fair way to get some concessions from the strip steel makers. The highest independent price on hoops and bands now is 5c., a recession of $10 per ton from the recent maximum, and in other lines of finished steel, with the lone exception of pipe, conditions are much more favorable to buyers now than they have been even in the recent past. New business with the independent companies is so light that they are making rapid inroads upon their backlogs of old orders, and those companies which had order books largely made up of high priced business have suffered so heavily from cancellations that they now are actively seeking customers. With new bookings falling considerably behind completed orders, plant operations are beginning to decrease. The Cambria Steel Co. now is estimated to be operating at around 60 per cent of capacity while a leading Pittsburgh independent has a number of its open-hearth furnaces down and is operating in its finishing department, particularly plate mills, on a more moderate scale than recently.

The Carnegie Steel Co. has 40 blast furnaces in operation, a gain of one since a week ago, and is maintaining an 80 per cent gait in its steel works operations. Activities of the American Sheet & Tin Plate Co. have decreased lately because of its inability to secure sufficient supplies of steel. The American Steel & Wire Co. is doing better in the matter of plant operations and the National Tube Co. has all of its plants running practically full. The Carnegie Steel Co. is not operating very fully at its Valley works because of the continued shortage of fuel, but independent steel companies in the Mahoning Valley report 80 per cent operations. Although there has been much fear that the most recent order of the Interstate Commerce Commission relative to coal car priority would materially curtail shipments of iron and steel, the results of the first week of this order have not been at all in line with expectations. The duration of downward tendency of prices is the subject of much discussion and while some are inclined to look for a turn for the better soon after the Presidential election, the more general opinion is that the readjustment will not have run its course until after the turn of the new year.

Pig Iron.—Prices only rarely in recent years have been as indefinite as they are at present. Melters, practically without exception, have all the iron they need and are not interested in the market except to the extent of rounding out their stocks. One merchant interest here reports sales of this sort in foundry iron aggregating about 700 tons of No. 2 at $47, Valley furnace. A western Pennsylvania radiator manufacturer, on the other hand, has been seeking 500 tons of No. 2 foundry for early delivery and has been quoted anywhere from $45 to $47, furnace. Not a sale worthy of note has been made in Bessemer iron, but there seems to be no justification for a higher quotation than $47, Valley furnace, for this grade in view of the fact that this price has been quoted by merchant producers and has found no taker. The only important business recently done in basic iron was a resale tonnage of slightly in excess of 1000 tons, which went to a Pittsburgh district sheet maker at $40, Valley furnaces. This business hardly is representative of the present market, for the reason that the iron had to be sold at the best price obtainable because of the inability of the original buyer to take it in and pay for it. The demand, however, for the latter grade has reached the saturation point and it is a prob-

lem for producers as to where they might dispose of a tonnage at any price to-day. Since several of the steel companies have substantial tonnages for sale and some of them have offered to take business at $43, Valley furnace, without making sales, a higher quotation than this is not warranted. Because of downward trend of prices and the relatively slow decline in the cost of coke, it is more than probable that as many as a dozen furnaces in the greater Pittsburgh district will be banked or blown out before long. The monthly meeting of the American Pig Iron Association is being held in Cincinnati to-day.

Structural Material.—Independent companies now are generally quoting shapes at 3.10c., but this is not a minimum, as some, notably those who took considerably high-priced business in naming that figure, are asking prospective buyers to make an offer. The market in fabricated material is holding fairly well, but is not free from the effects of the weakness in independent prices on plain material, and since so few structural projects of any importance are coming out, competition for business is sharp. The McClintic-Marshall Co. has taken 200 tons for a new building for the Montague Machine Co., Turner's Falls, Mass., and 150 tons for an extension to the foundry of the Pittsburgh Valve & Fittings Co., Barberton, Ohio. The American Bridge Co. reports 150 tons for a bridge for the Pennsylvania Railroad at Blairsville, Pa. Prices are given on page 1087.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.96 per gross ton:

Basic	$43.00
Bessemer	47.00
Gray forge	46.00
No. 2 foundry	47.00
No. 3 foundry	46.50
Malleable	50.00

Ferroalloys.—So far, the strike of the British coal miners has been without effect upon prices of ferromanganese, the quotations of both domestic and English producers still being $170 seaboard for 76 to 80 per cent material. So little has been going on lately that it is extremely difficult to give any reliable quotations. Resale tonnages on both domestic and English ferromanganese still appear to be available at prices well below those quoted by the producers, and it is a question whether the latter would adhere firmly to their prices if any attractive business were before them. The market is purely nominal and this is true of other ferroalloys as well as ferromanganese. Average 20 per cent spiegeleisen still is quoted at $80 to $82.50, furnace, by the leading makers, but it is doubtful if $80 could be obtained in this district to-day and the report is current that 3000 tons recently was sold for fourth quarter delivery in the East at $75 furnace, the buyer taking material running anywhere from 16 to 21 per cent in manganese content.

We quote 76 to 80 per cent domestic ferromanganese $160 to $175, delivered Pittsburgh, for either prompt or deferred shipment; English, $165 to $170, seaboard. We quote average 20 per cent spiegeleisen at $80, furnace and 50 per cent ferrosilicon at $75 to $80, furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces as follows: 9 per cent, $66; 10 per cent, $69.50; 11 per cent, $72.80; 12 per cent, $76.10. Silvery iron, 6 per cent, $56.50; 7 per cent, $58; 8 per cent, $60; 9 per cent, $62; 10 per cent, $64.50; 11 per cent, $67.80; 12 per cent, $69.80. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is $4.06 per gross ton.

Billets and Sheet Bars.—Business has been limited lately, but no very substantial basis exists for prices. Independent manufacturers are generally quoting sheet bars at $65 and mild rerolling 4 x 4-in. billets at $60, and some business is claimed to have been done at these figures, but the market is anything but strong and really is untested. If buyers approach producers, the advantage is with the latter on prices, but when makers have to seek buyers conditions are just the reverse. A good deal of secondary or rejected steel is being offered at very low prices, one report having it that a maker outside the Pittsburgh district has offered to sell standard re-rolling billets at $45 mill, equivalent to something over $50 at Pittsburgh. Buyers are using these cheap offerings as a means of depressing the price ideas of producers.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at $38.50 to $60; 2 x 2-in. billets, $42 to $63.50; Bessemer sheet bars, $42 to $65; open-hearth sheet bars, $42 to $65, and forging billets, ordinary carbons, $70 to $75 base, all f.o.b. Youngstown or Pittsburgh mill.

Wire Rods.—Independent makers, although admitting that demands are fewer and less urgent than they were recently, claim to be getting $75 on such tonnages of ordinary soft rods as they are selling. While no business at less than this figure, except of rods running rather high in carbon, has been noted lately, buyers are finding it easier to secure supplies than was the case a short time ago. The American Steel & Wire Co. is apportioning its commercial production among its regular customers at a price of $57. Prices are given on page 1087.

Plates.—Prices are not particularly well defined owing to the lack of important business. While some of the independent makers still are holding to 3.50c. base, it is frankly admitted by these factors that they are getting no business at that figure, while those willing to take on tonnages for reasonably early delivery at 3.25c. admit having lost business. So little actually is going on that the market is in an untested condition. Makers when approached usually quote 3.25c. or 3.50c., but when they offer tonnages, they find difficulty in getting buyers to name as much as 3c. Deliveries are being promised as quickly as 30 days by some independent companies and 60-day deliveries commonly are assured. It is evident that new bookings are falling behind the completed orders. The Steel Corporation and the Bethlehem Steel Co. have the largest order books, the latter because of the demands of the shipyards of its subsidiary companies. The Wheeling & Lake Erie Railroad has placed contracts for 1000 new box cars with wooden upper structures, and 2000 steel gondola cars. The Pressed Steel Car Co., Pittsburgh, has been awarded 500 of each class of cars, and the American Car & Foundry Co. 500 box cars, the remaining 1500 gondolas going to the Standard Steel Car Co.

We quote sheared plates of tank quality, ¼ in. and heavier for early delivery from independent mills at 3.25c. Pittsburgh. The Carnegie Steel Co. still quotes 2.65c. and is accepting business at that figure, but is not guaranteeing early delivery.

Wire Products.—Although there has been no weakening in the independent price schedules on common wire products, and one independent company which recently opened its books for first quarter of 1921 requirement of its regular customers reports a good response, it must be said that the market is neither as strong nor as active as it has been. Independent companies find buyers much more conservative about purchases than they were recently and the supply situation appears to have been helped by cancellations and suspensions, not to mention better performances by the mills. The Pittsburgh office of the American Steel & Wire Co. now is entering orders without submitting them for confirmation at the main sales office of the company.

We quote wire nails at $3.25 base, as the price of the American Steel & Wire Co., and $4.25 to $4.50 by independent mills. We quote bright basic wire at $3.25, the price of the American Steel & Wire Co. and $3.75 to $4, the price range of the independent mills.

Tin Plate.—Demand still is tapering and this condition is finding reflection in prices. Stock items which a few weeks ago were in such urgent demand that independent makers had no trouble in selling at $9 per base box, and which went as high as $10, have not recently sold above $9 and are being offered by some makers at $8.50. The latter price measures top on production tonnage and has found little recent basis in sales. Although the American Sheet & Tin Plate Co. will not open its books for about another month for the first quarter and half of 1921, it is intimated that when it does it will name the present price of $7 per base box. Almost no export demand is coming out and

the prices of such tonnages are fully $1 per base box below the recent figure.

We now quote tin plate to domestic consumers at $7 to $8.50 base box; stock items, $8.50 to $9, and for export $10 to $11 per base box, all f.o.b. Pittsburgh.

Steel Rails.—Fair demand still exists for light rails, but competition for business is sharper than it has been and 3.25c. is only rarely done.

The Carnegie Steel Co. is still quoting the March 21, 1919, prices, these being 2.45c. for 25 to 45-lb. sections, 2.49½c. for 16-lb. and 20-lb. sections, 2.54c. for 12-lb. and 14-lb. sections, and 2.58½c. for 8-lb. and 10-lb. sections. This company is also quoting standard sections 50 lb. and heavier at $45 for Bessemer and $47 for open hearth stock. The Cambria Steel Co. is quoting 25-lb. to 45-lb. sections at 3.75c., 16-lb. and 20-lb. sections, 3.79½c., 12-lb. 3.84c., at mill, for such delivery as it can make. The Jones & Laughlin Steel Co. is quoting light rails at 3.25c. for 25 to 45-lb. sections.

Iron and Steel Pipe.—Although tight money has discouraged oil field developments to some extent, there is no appreciable let-up in the demand for oil country tubular goods, and if makers are so inclined they might promptly put upon their books large orders. Demand for standard pipe also is described as strong, due to the fact that shipments over a long period were so much below actual requirements that distributors moved consignments out as rapidly as they were received and were not able to build up reserves. The Interstate Commerce Commission has issued a new order known as order No. 1001, which renews for an indefinite period order No. 107. The original order, however, is modified so that in the event the railroads fail to place at any plant the allotted number of cars, the companies will not be given car credits for the deficiency. Prices and discounts are given on page 1087.

Iron and Steel Bars.—Practically all of the independent companies now are quoting 3.25c. base for tonnages for reasonably early delivery, but demand is on an extremely limited scale and reports are current that this price has been shaded from $2 to $5 per ton. It also is reported that one of the car companies has cancelled against some tonnage placed a short time ago at 3.25c. The Steel Corporation appears to be making somewhat better deliveries at the old base of 2.35c. and this makes difficult the maintenance of independent prices. No change is noted in iron bars, but new demands are much smaller than they were a short time ago.

We quote steel bars rolled from billets at 2.35c., this being the price of the Carnegie Steel Co. for very indefinite delivery, likely not before first quarter of next year. Other mills rolling steel bars from billets quote from 3c. to 3.25c. at mill, prices depending entirely on the buyer and the delivery wanted. We quote reinforcing bars, when rolled from billets, at 3.75c. to 4c., and from old steel rails at about 3.50c. at mill. We quote common iron bars at 4.75c. and refined iron bars at 5c. to 5.50c. in carloads, f.o.b. mill, Pittsburgh.

Cold-Finished Steel Bars.—Demand has shrunk to rather limited proportions, even from those users who a short time ago vainly were endeavoring to get a place upon the books of makers. Cancellations and suspensions by the automobile industry made a considerable difference in the available supply, and in the past few weeks the situation has been weakened further by cancellations or shipping hold-ups by the agricultural implement manufacturers. To-day not over 4.25c. base, Pittsburgh, is obtainable on competitive business, while one maker is holding to 4.10c., and the price of the American Steel & Wire Co. is 4c. We note a sale of 100 tons of 3-in. shafting to a mine car builder at 4.25c. Inquiry is out from a Chicago consumer for 1000 tons of cold-finished bars for first quarter of 1921 delivery.

Spikes.—The Baltimore & Ohio, the Chesapeake & Ohio, and the Boston & Maine railroads have been buyers of standard spikes in the past week, and a portion of their purchases were at 4.25c. mill. Generally new inquiries in both standard and small spikes are few and small, and most makers soon will be in need of orders to keep going as the back-log of old business rapidly is being eaten into. Prices are given on page 1087.

Nuts, Bolts and Rivets.—Makers here still report the demand to be good and not only has there been no cutting of prices, but it is asserted that since present prices and discounts are based upon low-priced raw material, it will take more than a decline in steel to bring about lower prices in these products. Demand for small bolts is described as heavy, due to the fact that the inability of makers to secure adequate supplies of wire has prevented much progress in catching up with old bookings and in making very large shipments. Scarcity of labor also is restricting production. Prices and discounts are given on page 1087.

Hot-Rolled and Cold-Rolled Strips.—The market is in an even more depressed condition now than it has been. Up to within a week consumers, exclusive of the automobile industry, had been inclined to press for shipments against their orders, but since then they have been cancelling in some cases and asking for suspensions against shipments in others and makers now find business exceedingly slack. Some makers continue to hold at 5.50c. base, for hot-rolled and 8.50c. base for cold-rolled, but no sales of any account recently have been made at these prices. On the other hand, business has been done at 5c. and 8c. respectively, and competition for passing orders is so sharp that these prices may be safely regarded as representing the real market. On cold-rolled strips the American Steel & Wire Co. is quoting 6.25c. base.

Sheets.—Although independent manufacturers are refusing to revise contracts as demanded by some of the automobile companies, and insisting strongly upon fulfillment by the latter of their obligation, the dispute seems to be restricting specifications and companies which devoted most of their tonnage to the automobile industry have considerable tonnage for early delivery. Desire for business on the part of these producers makes for a rather easy market. Prices are given on page 1087.

Hoops and Bands.—The independent market now is quotable at 4.50c. to 5c. base, Pittsburgh, makers who have been quoting 5.50c. base having dropped to 5c. flat. New business is small and specifications against old orders on a much lighter scale than they were prior to the slump in the automobile industry. The Steel Corporation has made no change in its price.

Coke.—The past week has seen a considerable increase in the offerings of spot tonnages of both furnace and foundry grades, and prices are down fully $2 per ton from those of a week ago. Standard furnace coke to-day now is quotable at $15.50 to $16 per net ton oven, and foundry grade at $16.50 to $17. The sudden change of front in the market may be ascribed in the first place to a falling away in consumption because the downward tendency of pig iron prices has resulted in cutting off the blast at furnaces, while with the prospects that a number of stacks will be banked or blown out in the near future, much contract coke is coming upon the market. Increased car placements in the Connellsville region have resulted in enlarged oven operations and better production. The only contract business recently noted was a deal involving 15,000 tons a month for the six months ending March 31, 1921. A Pittsburgh district steel company was the buyer and while details of the transaction are withheld, it is reported that it is upon a basis of four to one on Valley basic pig iron with maximum and minimum quotations. Tapering foundry activities have found reflection in the decreased demand for foundry coke and a drop in the price, although spot offerings have continued comparatively small.

Old Material.—Business is almost at a standstill and prices are extremely indefinite, depending upon the circumstances surrounding the transactions that are taking place. Neither the steel manufacturers nor the foundry interests appear at all eager to buy at present, for the reason that they are getting ample supplies on old contracts. Trading, consequently, has simmered down largely to deals between dealers. In brief, the situation is this: If a consumer were to enter the market for a tonnage of say, for example, heavy melting steel, it is probable that the lowest price that would be made would be $28.50, but if a dealer were to offer a tonnage of this grade the chances are that $27 would

be the best bid. This is true of all grades and in the lack of any important sales to consumers, the market is as accurately quoted at one price as the other. Some consumers are making rejections, but no important tonnages have been involved so far, shipments being accepted quite promptly by most consumers. The railroads are functioning almost normally in the movement of scrap, with the exception of the Pennsylvania Railroad, and that road is issuing permits more freely than it did recently.

We quote for delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, deliv.	$28.00 to $28.50
No. 1 cast (for cupola)	40.00 to 41.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh	38.00 to 39.00
Compressed sheet steel	23.00 to 23.50
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh, dist.	17.00 to 17.50
Railroad knuckles and couplers	29.00 to 29.50
Railroad coil and leaf springs	29.00 to 29.50
Railroad grate bars	29.50 to 30.00
Low phosphorus melting stock (bloom and billet ends, heavy plates, ¾ in. and heavier)	33.00 to 34.00
Railroad malleable	34.00 to 35.00
Iron car axles	55.00 to 56.00
Locomotive axles, steel	46.00 to 47.00
Cast iron wheels	42.00 to 43.00
Steel car axles	42.00 to 43.00
Rolled steel wheels	29.00 to 29.50
Machine shop turnings	16.00 to 16.50
Sheet bar crop ends (at origin)	30.00 to 31.00
Heavy steel axle turnings	23.00 to 24.00
Short shoveling turnings	18.50 to 19.00
Heavy breakable cast	34.00 to 35.00
Stove plate	29.00 to 30.00
Cast iron borings	19.00 to 19.50
No. 1 railroad wrought	32.00 to 33.00

IRON AND INDUSTRIAL STOCKS

Liquidating Movement Apparently Has Ended for the Time Being

An elaborate series of financing operations are cleaned up, loanable money rates are easier and the liquidating movement in securities apparently has ended, for the time being at least. As a result, the market for securities has been better of late without any vigorous upswing in prices. The industrial situation, as a whole, is still unsettled, and this fact in a large measure explains the absence of a broad buying movement in securities with a wider price movement. Many investors are closely watching developments on the other side of the water.

Inquiries from railroads for cars and locomotives are larger than they have been before in some time and this fact has helped the market for equipment securities and railroad stocks. Then, too, there are signs which indicate the worst is over in the automobile industry, and the trend of automobile stock prices has been upward as a result. With copper metal offered at as low as 16c. per lb. it is not to be wondered that raw material securities are in less favor than others.

The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm. com.	33 - 34⅝	Int. Har. com.	108 - 111
Allis-Chalm. pf.	— - 76	Lackawanna Steel.	62 - 65⅝
Am. Can com.	31¾ - 34	Lake Sup. Corp.	11 - 12
Am. Can pf.	86 - 87½	Midvale Steel.	38 - 39½
Am. C. & F. com.	133¼ - 135⅞	Nat.-Acme	32⅞ - 33¼
Am. C. & F. pf.	109¼ - 110½	Nat. E. & S. com.	— - 58
Am. Loco. com.	95 - 98¼	N. Y. Air Brake	96 - 97½
Am. Loco. pf.	100¼ - 100½	Nova Scotia Steel.	40¼ - 41
Am. Steel F. com.	37½ - 38½	Press. Steel com.	95¾ - 98
Am. Steel F. pf.	— - 85	Press. Steel pf.	101 - 101⅛
Bald. Loco. com.	111⅝ - 116¾	Ry. Stl. Spg. com.	95¾ - 96¾
Bald. Loco. pf.	97 - 98¼	Ry. Stl. Spg. pf.	— - 104¼
Beth. Steel com.	67⅝ - 68	Replogle Steel.	75 - 81¼
Beth. Stl., Cl. B.	68¾ - 72¼	Republic com.	75 - 79
Beth. Stl., 8% pf.	103¾ - 104¼	Republic pf.	— - 95
Case, J. I., pf.	84½ - 85	Sloss com.	64 - 67¾
Chic. Pneu. Tool.	78¼ - 80⅜	Superior Steel.	48½ - 52
Colorado Fuel.	33½ - 34¼	Transue-Williams.	— - 45
Cruc. Steel com.	128 - 132	Un. Alloy Steel.	38¾ - 39
Cruc. Steel pf.	92⅞ - 93¾	U. S. Steel com.	86½ - 89
General Electric.	138½ - 140½	U. S. Steel pf.	108¼ - 109¼
Gt. No. Ore Cert.	34 - 34⅝	Vanadium Steel.	63 - 66⅜
Gulf States Steel.	49 - 50¼	Westingh'se Elec.	46¾ - 47¼

SHEET SPREAD NARROWS

Premiums Disappear in the Youngstown District —Pipe Demand Active

YOUNGSTOWN, OHIO, Sept. 18.—Spread on sheet prices has narrowed from 6.50c. to 9c. on black sheets, which prevailed several months ago, to from 6.50c. to 7c. There is a dearth of premium prices. So far as known in this territory, sheet makers have resisted attempts of the Ford Motor Co. representatives to reduce prices on contracts, inasmuch as a number of them are converting sheet bars which they are buying on contract at $70. New business entering the district is confined to small tonnages, ranging from 25 to 100-ton lots. Concessions have been made on some sheet contracts providing for the elimination of the premium, but the base has been unaltered. The range on full finished sheets is now from 7.75c. to 8c., as compared with a spread from 10c. to 12c. three months ago. Galvanized is quotable from 8.25c. to 8.50c., with blue annealed soft at 5c.

There is little diminution in demand for tinplate, black sheets, pipe, wire, nails and plain wire. Sales representatives who have studied the decline in demand from the automobile industry, particularly in Detroit, are inclined to believe there will be a revival in from 30 to 60 days. They report that while steel inventories of some of their customers are heavy, because of recent betterment in rail shipments, they are unbalanced due to readjustments in plant schedules. Buyers representing this class of the consuming trade are holding back because of their steel stocks, curtailment in production and an evident belief that prices will show further recessions.

The district's leading tinplate interest reports an unsatisfied demand from packing houses which in some cases are displacing with tinplate containers made of other material. The unfilled tonnage of this interest will engage its production until beyond the first quarter of 1921. Considerable tonnage being delivered is at $8 per base box, although nearby delivery would command $10.

Active Demand for Pipe

In view of current inquiry and sold-up condition of the mills, the pipe situation is altogether satisfactory to makers from the standpoint of business. Some orders which were recently booked by an independent interest will not find a place on its rolling schedules until well toward the second half of 1920, so heavy is the volume of business booked prior and so well sustained the current inflow. This condition maintains for both lapweld and buttweld pipe. Jobbers are active in the market, while there is little apparent abatement in the eagerness of oil drilling consumers for pipe. There is not the insistence for early delivery, though, on the part of this latter class of buyers and the willingness to pay premium prices as existed a month ago.

There has been some slack in buying of barbed and fencing wire, indicating hesitancy on the part of agricultural buyers, but demand for plain wire and wire nails has not appreciably sagged.

Leading independent producers of steel bars are committed for the remainder of the year, in face of a slowing up in fresh inquiry. The plate market continues to be marked by inactivity, on the whole, though one interest reports spasmodic revival.

There has been a slower tendency of declining prices throughout the territory, although many buyers are still obsessed with the idea that they will be able to get steel cheaper six months from now. Specifications against commitments have increased in some substantial lines.

Lakin C. Taylor, president Pittsburgh Tin Plate & Steel Corporation, indicted on a charge of conspiracy to defraud, in connection with the financing of the corporation, entered a plea of no defense to the indictment in criminal court at Pittsburgh, Oct. 18, and at the request of his counsel was committed to St. Francis Hospital for observation as to his mental condition. The trial of W. C. Watkins, secretary of the company, indicted on the same charge, is to be called later.

Chicago

CHICAGO, Oct. 19.

Although the market has undergone no decided changes during the week, there are indications that it is gradually settling to a new basis of adjustment. This tendency has been encouraged by new developments affecting the demand. Agricultural implement manufacturers, who felt in a secure position a few weeks ago, are now affected by the sudden conservatism of the farmers, who are disheartened because of the decline in grain prices. Exports have taken a marked drop. The economic distress in Japan is now expected to last for a year or more. The coal strike in England will cut off purchases of steel by that country. Cuba has a moratorium. Argentine business has been affected by a drop in exchange, and the Dutch East Indies have ceased buying. Not only has the foreign outlet for iron and steel products been largely cut off, but material previously sold for export, principally plates, sheets and bars, is now being offered for resale in this country. Several shipyards on the coast and the Great Lakes have closed and sold their stocks to jobbers.

Actual price changes during the past week have been of minor importance. Ruling independent prices on tank plates and mild steel bars now seem well established at 3.25c., Pittsburgh. The situation in structural shapes is somewhat confused. Although most mills are holding to 3.10c., Pittsburgh, on plain material, a few sales have been made at 3c. Rail carbon steel bar manufacturers have reduced their prices to 3.75c., mill, this change being in proportion to the decline in rerolling rail prices. The leading cast-iron pipe manufacturer has granted a discount of 1 per cent for cash from the shop price. In bolts and nuts there are signs that the manufacturers who advanced their prices are finding it difficult to book new business on that basis in competition with those who are adhering to the lower quotations.

On pig iron, furnace quotations remain firm, but resale iron is moving at concessions. Two sales of Northern foundry, involving 5000 tons, were made in Michigan at $3 below the blast furnace quotation.

The operating situation in the district is the same as a week ago. The plate mill of the Inland Steel Co. is still down and the period of inactivity is being utilized to convert the installation into a tandem mill through the addition of a rougher. The width of the mill will also be changed from 90 in. to 100 in.

The first important change in warehouse quotations since the freight advance occurred to-day, when A. M. Castle & Co. reduced their prices on plates, shapes and bars to a parity with those of the Illinois Steel Co. warehouse and the Scully Steel & Iron Co. Since practically the first of the year the latter two jobbers have been quoting 50c. below the other warehouses. The action of the Castle company constitutes the first change in the interrelationship of the various storehouses.

Ferroalloys.—The English coal strike, if at all protracted, will prove a source of strength for domestic ferromanganese, in the opinion of some members of the trade. For the time being, however, quotations are unchanged.

We quote 75 to 80 per cent ferromanganese, seaboard, $165 to $170; 50 per cent ferrosilicon at $85, delivered; spiegeleisen, 18 to 22 per cent, $80 to $85 furnace.

Pig Iron.—Additional resale iron has appeared and two large lots have been sold at concessions. A 3000-ton lot and a 2000-ton lot, both Northern foundry, were resold in Michigan for October delivery at $3 below present furnace quotations. Among offerings of resale iron 4000 tons of Northern foundry has been advertised for sale at the same concession and numerous smaller tonnages are in the hands of the trade. Notwithstanding concessions on resale iron, there have been a few sales from furnace at market prices. Spot Southern foundry in 50 and 100-ton lots respectively brought $42 base, Birmingham, and 100 tons of prompt malleable also commanded the full market price. Silvery continues unsteady, 100 tons of 6 per cent resale material changing hands at $5 under the furnace quotation. According to an unverified report, an Ohio maker has taken new business in copper free low phosphorus at $56, furnace, or $4 under the nominal market. Despite the resale offerings, the merchant blast furnaces in this district are operating full blast and shipping out all of their output. Although some deliveries have been suspended, in the aggregate the amount of iron held up has been small.

The following quotations are for iron delivered at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 70c. per ton.

Lake Superior charcoal, averaging sil. 1.50 (other grades subject to usual differentials), deliv. at Chicago	$58.50
Northern coke, No. 1, sil. 2.25 to 2.75	$45.25 to 48.25
Northern coke foundry, No. 2, sil. 1.75 to 2.25	43.00 to 46.00
Northern high phos.	46.00
Southern coke, No. 1 foundry and No. 1 soft, sil. 2.75 to 3.25	50.92 to 51.87
Southern coke, No. 2 foundry, sil. 2.25 to 2.75	49.92 to 50.37
Southern foundry, sil. 1.75 to 2.25	48.67
Malleable not over 2.25 sil.	46.50
Basic	46.00
Low phos. (copper free)	60.00
Silvery, 7 per cent	63.32

Plates.—Independent quotations on tank plates of more than 3.25c., Pittsburgh, have no basis in sales. Not only are mills in need of new business but considerable export material is being offered for resale in this country. An inquiry from a railroad supply manufacturer calls for 1000 tons of plates.

The mill quotation is 2.65c. to 3.25c., Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.78c. to 4.25c. for plates out of stock.

Structural Material.—While ruling independent prices on plain material are now 3.10c., Pittsburgh, sales have been made at as low as 3c., but that price is apparently the absolute minimum. One of the reasons for the reduced demand is the fact that a number of shipyards on the Great Lakes and the coast have closed down and disposed of their stocks of plates, shapes and bars to jobbers. In the fabricating field, there is a little more activity to note this week. Bids on the local Federal Reserve Bank, involving 8700 tons, have been submitted and an award is expected soon. Figures are also in on the Stroh Building, Detroit, calling for 1500 tons, and a letting is expected within the next week. A job in prospect is a $1,000,000 court house for Kansas City, Kan. A referendum on the bonds will be taken on Nov. 2. Other prospective work includes:

Bascule Bridge, Racine, Wis., 600 tons.

Powerhouse, storehouse and oil house, Chesapeake & Ohio Railroad, Clifton Forge, Va., bids asked by Arnold Co., Chicago, 350 tons.

International Harvester Co., cupola building, Canton, Ill., 110 tons.

Recent lettings include:

Portland Railway, Light & Power Co., Sandy River bridge in Oregon, 236 tons, to Overmire Steel Construction Co.

Pacific Fruit Express Co., freezing and winter storage rooms for ice plant, Ogden, Utah, 176 tons, to American Bridge Co.

Chicago, Burlington & Quincy Railroad Co., girders for bridge, Rock Falls, Ill., 124 tons, to American Bridge Co.

Chicago & Alton Railway Co., addition to north freight and office building, Chicago, 121 tons, to American Bridge Co.

Chicago & Northwestern Railroad, miscellaneous material for ore dock, 114 tons, to unnamed fabricator.

Consolidated Water Power & Paper Co., Decker House, Grand Rapids, Wis., 109 tons, to unnamed company.

The mill quotation is 2.45c. to 3.10c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.58c. to 4.08c. for materials out of warehouse.

Sheets.—On recent inquiries involving several thousand tons, blue annealed was quoted as low as 5c. base, Pittsburgh, black at 6.25c. and galvanized at 7.75c. Although confirmation is lacking, it is assumed that sales were made at the prices quoted. The market is still unsteady, but it is felt by some that the prices named above represent rock bottom quotations. Export material offered for resale in this country has contributed to the weakness of the market.

Mill quotations are 4.35c. to 6.25c. for No. 28 black; 3.55c. to 5c. for No. 10 blue annealed, and 5.70c. to 7.75c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb. The lowest prices are those of March 21, 1919.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 7.13c.; No. 28 black, 8.10c.; No. 28 galvanized, 9.60c.

Wire Products.—While a change in the sentiment of buyers is to be noted, the aggregate bookings of the

leading interest are still so large as to force a continuance of the replacement basis of taking new business. Individual inquiries are not so large as heretofore and purchasers are not so desirous of buying far ahead, but the actual total of orders shows no decline of consequence. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1087.

Rails and Track Supplies.—The Chesapeake & Ohio Railroad of Indiana is in the market for 10,000 tons of rails for 1921. Most Western lines have either closed contracts for their next year's requirements or have tentatively arranged for their needs pending an announcement by the Steel Corporation as to its prices for 1921. Such an announcement is expected within a week or two. It is probable that rails rolled here will total close to 800,000 tons.

Standard Bessemer rails, $45 to $55; open-hearth rails, $47 to $57. Light rails, 2.45c. to 3.50c., f.o.b. makers' mills. Standard railroad spikes, 3.35c. to 4c., Pittsburgh. Track bolts with square nuts, 4.60c. to 5c., Pittsburgh. Steel tie plates, 3c. to 4c. and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 3.75c. to 4c., f.o.b. makers' mills.

Bars.—Mills are commencing to receive requests for cancellations and while they are uniformly opposed to cancelling contracts, they are willing in some cases to suspend shipment for a period. It is notable that the agricultural implement industry is not in so strong a position as formerly, the demand for its products having been unfavorably affected by the farmers' reaction to the decline in grain prices. Demand for bars from other quarters is also cautious. While some independents are still quoting mild steel bars at as high as 3.75c., Pittsburgh, it is doubtful whether any late purchases have been made at more than 3.25c. The demand for bar iron is slow, but prices are unchanged. Rail carbon steel bar makers have generally reduced their prices to 3.75c., mill, the decline being in proportion to the fall in rerolling rails.

Mill prices are: Mild steel bars, 2.35c. to 3.25c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 3.75c. to 4c., Chicago; rail carbon, 3.75c. mill.

Jobbers quote 3.48c. to 3.98c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.90c. for rounds and 6.40c. for flats and squares, an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. orders up to 1000 lb. Jobbers quote hard and medium deformed steel bars at 4.63c. base.

Cast Iron Pipe.—Although no change in prices is to be noted, the leading interest effective Oct. 18 will concede one per cent discount from the shop price for cash, *i.e.*, sight draft with bill of lading. Bids will be taken on 250 tons for River Rouge, Mich., to-day. The Montgomery County Water Supply, Dayton, Ohio, received bids on 1250 tons through a contractor on Oct. 16, but the figures were referred to the engineer and a decision was deferred to a later date. Gothenberg, Neb., received bids on 100 tons on Oct. 12.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., $88.10; 6-in. and above, $83.10; class A and gas pipe, $4 extra.

Bolts and Nuts.—The slowing up of some of the agricultural implement manufacturers has resulted in a curtailment of some of the demand expected by bolt and nut plants. Some makers are not so well fortified with bookings as others and are making concessions under the recent advances to secure new business. Other makers did not participate in the advance originally. In this district at any rate the lower prices named on page 1087 are commoner than the higher quotations. One important interest, in fact, is selling on an even lower basis, not having advanced prices since August, 1919.

Jobbers quote structural rivets, 5.08c. to 5.73c.; boiler rivets, 5.18c. to 5.83c.; machine bolts up to ⅞ x 4 in., 20 per cent off; larger sizes, 10 off; carriage bolts up to ⅞ x 6 in., 10 off; larger sizes, 5 off; hot pressed nuts, square tapped and hexagon tapped, list price plus $1.15; blank nuts, list price plus, $1.15; coach or lag screws, gimlet points, square heads, 30 per cent off. Quantity extras are unchanged.

Railroad Rolling Stock.—The Western Pacific has let 700 composite general service cars to the Pressed Steel Car Co. The Denver & Rio Grande has revived an inquiry for cars, being in the market for 250 to 500 box cars and the same number of gondola cars. The Central of Georgia has withdrawn its inquiry for 500 box, 200 flat bottom coal cars and 100 stock cars.

Old Material.—Consumers are buying very little and trading among dealers indicates an unsteady market, yet one not uniformly weak as a week ago. Railroad offerings include the Pennsylvania Southwestern System, 1500 tons; Pennsylvania Northwest system, 400 tons; Soo Line, 800 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton	
Iron rails	$34.00 to	$34.50
Relaying rails	57.50 to	62.50
Car wheels	36.00 to	36.50
Steel rails, rerolling	33.50 to	34.00
Steel rails, less than 3 ft	23.50 to	24.00
Heavy melting steel	20.50 to	21.00
Frogs, switches and guards, cut apart	20.50 to	21.00
Shoveling steel	21.00 to	21.50
Low phos. heavy melting steel	26.00 to	26.50
Drop forge flashings	18.00 to	18.50
	Per Net Ton	
Iron angles and splice bars	31.50 to	32.00
Steel angle bars	21.00 to	21.50
Iron arch bars and transoms	33.00 to	33.50
Iron car axles	39.00 to	39.50
Steel car axles	31.50 to	32.00
No. 1 busheling	17.50 to	18.00
No. 2 busheling	10.00 to	11.00
Cut forge	19.50 to	20.00
Pipes and flues	14.00 to	14.50
No. 1 railroad wrought	20.00 to	20.50
No. 2 railroad wrought	19.50 to	20.00
Steel knuckles and couplers	21.50 to	22.00
Coil springs	23.00 to	23.50
No. 1 cast	28.00 to	29.00
Boiler punchings	21.00 to	22.00
Locomotive tires, smooth	19.00 to	20.00
Machine shop turnings	8.00 to	8.50
Cast borings	11.00 to	11.50
Stove plate	24.00 to	25.00
Grate bars	23.50 to	24.50
Brake shoes	21.00 to	21.50
Railroad malleable	22.00 to	22.50
Agricultural malleable	22.00 to	22.50
Country mixed	14.50 to	15.50

Boston

BOSTON, Oct. 19.

Pig Iron.—Foundry pig iron prices are purely nominal, there not having been sufficient business booked since last reports to constitute a market. Going business is confined to scattering lots, prices for which are governed by circumstances and take a wide range. A Connecticut foundry offers several cars of eastern Pennsylvania No. 2 X, delivery between now and March, at $46.50 to $46.75, furnace, or $45.25 to $45.50, furnace base. Resale Wickwire No. 1 X, in car lots, is offered at $52, delivered, or about $43.50, furnace base. Resale Virginia No. 2 X is offered at $45.50, furnace, or $44.25, furnace base. These prices illustrate to what extent foundries are willing to cut regular furnace prices, but it is only fair to state that in each instance the iron was bought at prices considerably below those asked for resale stock. Furnaces are shipping freely, all New England embargoes having been lifted. Cancellation requests are more frequent, but few large tonnages are involved. A textile machinery maker wants to cancel 1000 tons Virginia bought at $36, furnace base, and a Vermont machine tool builder 700 tons Northern bought at $42, furnace base. The number of foundries asking furnaces to hold up shipments has increased noticeably. Delivered pig iron prices follow:

East. Pa., sil. 2.25 to 2.75	$55.31 to $56.31
East. Pa., sil. 1.75 to 2.25	54.06 to 55.06
Buffalo, sil. 2.25 to 2.75	54.71 to 55.71
Buffalo, sil. 1.75 to 2.25	53.46 to 54.46
Virginia, sil. 2.75 to 3.25	57.58 to 58.58
Virginia, sil. 2.25 to 2.75	55.83 to 56.83
Virginia, sil. 1.75 to 2.25	54.58 to 57.58
Alabama, sil. 2.75 to 3.25	51.91 to 54.91
Alabama, sil. 2.25 to 2.75	50.91 to 53.91
Alabama, sil. 1.75 to 2.25	49.66 to 52.66

Coke.—A considerable tonnage of first half, 1921, foundry coke has been booked on a sliding scale basis during the past week, but most of the largest consumers are not disposed to buy just now. The buying has been confined almost wholly to small foundries. The Providence Gas Co., Providence, R. I., has withdrawn from the first half, 1921, market, it being sold up for that period, according to an announcement by the management. The New England Coal & Coke Co.'s price on foundry coke is unchanged on the Oct. 1 basis. Because business has slowed up in spots, foundries in a

number of instances are getting 1920 coke faster than needed and are asking deferred shipments.

Finished Material.—The demand for concrete bars is fairly good, and as high as 4c., f.o.b. Pittsburgh, has been paid. The market for other bars, structural shapes and plates is quiet, requests for cancellations and deferred shipments being in order. The only sizable sale reported since last week is 211 tons of plates by the Lackawanna Steel Co. to the Groton Iron Works, Groton, Conn. Iron and steel continue to move out of warehouses in a satisfactory manner and accumulation of stocks is slow, notwithstanding increased mill shipments, especially of small sizes.

Jobbers quote: Soft steel bars, $5.50 to $6 per 100 lb. base; flats, $6.50 to $6.85; concrete bars, $5.50; tire steel, $6.50 to $7; spring steel, open hearth, $11; crucible, $16; steel bands, $8 to $8.25; steel hoops, $9; toe calk steel, $7.50; cold-rolled steel, $8 to $10; structural, $5 to $6; plates, $5.50 to $6.05; No. 10 blue annealed sheets, $7.80; No. 28 black sheets, $9.90; No. 28 galvanized sheets, $11.50; refined iron, $5.50 to $8; best refined, $7.50; Wayne, $9.50; band iron, $8; hoop iron, $9; Norway iron, $20.

Old Material.—Scattered buying of No. 1 machinery cast and stove plate by foundries is noted, but the scrap market otherwise is dull and prices are still inclined toward weakness under continued free offerings. Some dealers say heavy axle turnings, blast furnace borings and turnings, forged scrap and bundled skeleton are not worth more than $12. While opinion as to this fact is mixed, certain it is that prices for these materials are nearer than they have been before in a long time. Foundries are reserving scrap stocks and working on surplus pig iron stocks. Local yard prices on old material follow:

No. 1 heavy melting steel	$17.00 to $18.00
No. 1 railroad wrought	22.00 to 23.00
No. 1 yard wrought	19.00 to 20.00
Wrought pipe (1-in. in diameter, over 2 ft. long)	14.00 to 16.00
Machine shop turnings	12.00 to 13.00
Cast iron borings	16.00 to 17.00
Heavy axle turnings	13.00 to 14.50
Blast furnace borings and turnings	11.50 to 12.50
Forged scrap	11.00 to 12.00
Bundled skeleton	11.00 to 12.00
Street car axles	28.00 to 30.00
Car wheels	34.00 to 35.00
Machinery cast	37.00 to 38.00
No. 2 cast	35.00 to 36.00
Stove plate	25.00 to 26.00
Railroad malleable	25.00 to 26.00
Rerolling rails	30.00 to 31.00

Buffalo

BUFFALO, Oct. 18.

Pig Iron.—There is little activity, though the market is somewhat more lively than a week ago. Foundry is the only grade that figured in the selling. One producer sold 1500 tons of the various grades to a single consumer at a base price of $50. This iron was for delivery over the portion of the first half from January to May. This interest reports about 1000 tons of foundry being inquired for, on which prices were quoted, but the tonnage has not been placed. Another iron interest has been selling foundry at the regular $50 base. This furnace took about 1000 tons for the last half of this year. There is considerable resale iron in the market and most of it is being sold.

We quote f.o.b. Buffalo, the lower prices of foundry grades being resale:

No. 1 foundry, 2.75 to 3.25 sil.	$48.00 to $53.00
No. 2 X foundry, 2.25 to 2.75 sil.	46.25 to 51.25
No. 2 plain, 1.75 to 2.25 sil.	45.00 to 50.00
Basic	48.00
Malleable	47.00 to 47.50
Lake Superior charcoal	58.00 to 60.00

Finished Iron and Steel.—Business is quiet and prices seem to be settling. High premium mills are reducing their prices to the former levels of the conservative independents, but though cuts have been considerable in some instances, it has not served to stimulate buying. The prevailing prices now figured at base are bars, 3.25c.; plates, 3.25c., and structural shapes, 3.10c. The demand is just about as it has been, with no spectacular inquiries. One good phase of the situation is the falling-off of requests for cancellation, except on the part of the automobile industry. Mills are making little effort to attract tonnage and are devoting their efforts to shipping on orders taken. The withdrawal of permits for certain cars and the elimination of the higher than 38-in. side car without special permission, has tightened the movement of steel somewhat. It is stated that certain mills outside the district have been forced to pile. There is no ground for pessimism, according to mill men. Purchasing by the railroads is expected to take up the slack within two months, at the latest. The Pennsylvania Railroad Lines East, for instance, is inquiring for 100,000 tons of rails, and there have been other rail inquiries. The 100,000-ton inquiry represents the Pennsylvania's ordinary annual requirement. Most of the other rail inquiries that have been accepted are understood to have been taken by the leading interest. The demand for plates, bars and shapes is not large, with bars a trifle better than the other lines. Inquiry for wire products and pipe is undiminished. A local mill reports inquiries for good-sized tonnages of billets and rods. On billets $60 was quoted. The Kellogg Structural Steel Co. will fabricate the steel for an addition to the Cayuga Operating Co., Portland Point, N. Y., and for an addition to the plant of the American Car & Foundry Co., Buffalo. Each job involves 75 tons.

Warehouse prices f.o.b. Buffalo are: Steel bars, 4.65c.; shapes, 4.15c.; plates, 4.30c.; No. 10 blue annealed sheets, 7.15c.; No. 28 black sheets, 9.10c.; No. 28 galvanized sheets, 10.60c.; hoops, 6.60c

Old Material.—Though there are few tangible signs to support the theory, dealers are beginning to believe that the depression in the market will not be as sharp as was at first believed. They base this idea chiefly on information obtained from mills that orders are not slackening in as great volume as was at first feared, and this is strengthening the belief that the market will be tided over the present era of small purchasing. Dealers are encouraged by the apparent inclination of the railroads toward purchasing materials. Old order requirements are still being sought and prices have not changed.

We quote dealers' asking prices per gross ton, f.o.b. Buffalo as follows:

Heavy melting steel, regular grades	$25.00 to $26.00
Hydraulic compressed	22.50 to 23.00
Low phos., 0.04 and under	33.00 to 34.00
No. 1 railroad wrought	31.50 to 32.50
No. 1 machinery cast	40.00 to 41.00
Iron and steel axles	41.00 to 42.00
Car wheels	40.00 to 41.00
Railroad malleable	32.00 to 32.50
Machine-shop turnings	14.00 to 15.00
Heavy axle turnings	19.50 to 20.50
Clean cast borings	20.00 to 21.00
Iron rails	31.00 to 32.00
Locomotive grate bars	25.00 to 26.00
Stove plate	31.50 to 32.50
Wrought pipe	20.50 to 21.50
No. 1 busheling	19.50 to 20.50
Bundled sheet stampings	16.50 to 17.50

Birmingham

BIRMINGHAM, Ala., Oct. 19.

Pig Iron.—The leading interest is open for what foundry iron it may find capacity for at $38 for the first half of 1921. Some has been sold—not much. This has been the price of the leading interest during the year, but it has operated but one stack on foundry and the small quantity of iron offered compared with the tonnage offered by the independents has not at any time served to lower prices of the independents. There is no present indication that the leading interest will play more figure in the general market than heretofore, owing to its requirements for conversion in Ensley and Fairfield mills. Very little new business has been booked. The small lots going are for nearby delivery and are sold on the $42 base with silicon differentials. Atlanta took a carload lot and a Birmingham melter 500 tons. Louisville & Nashville Railroad is believed to have placed 1800 tons for Chattanooga and Louisville use out of the district, securing better terms than offered here. A large foundry interest is forwarding 4000 to 5000 tons via Savannah to Providence, R. I., for New England use on consignment to agent as a convenience to that section, but most of the iron was

sold before manufactured for consignment. Steel and iron mills of the leading interest are operating at greater speed this month than last and lost no productive capacity in September on account of the strike. The Conners-Weymann Steel Co. is adding to its hoop and tie plant in Birmingham and is operating night and day. Shipments are easy and, in spite of some hold-up requests, stocks should go lower still this month. Furnace operations are excellent, two stacks of one interest turning out only silicon 3.25 to 4.75 in a recent day's cast.

We quote per gross ton f.o.b. Birmingham district furnaces, the Tennessee company excepted, as follows:

Foundry, sil. 1.75 to 2.25	$42.00
Basic	41.00
Charcoal	60.00

Cast Iron Pipe.—Water and gas pipe foundries are receiving more orders than they had expected recently. The United States Cast Iron Pipe & Foundry Co. booked an order from the New Orleans Sewerage and Water Board for 7000 tons of 42 in. and 1050 tons of 4 to 20 in. Part of this order, presumably the larger sizes, will come from stock made up for the Argentine Republic prior to the war, on which the coming of the war prevented delivery. Sanitary pipe makers report jobbers as not at all interested in 1921 business. No price concessions are reported.

Coal and Coke.—Governor Kilby has declined to withdraw military from the mining field or to lift the order prohibiting mass meetings in the open. Reduction of coal output by reason of strike for the six weeks of its duration has been 7 per cent. Production is steadily increasing. Coke supply is easier at $15 to $17 for foundries and $11 to $12 for furnaces.

Old Material.—The scrap market is almost at a standstill with big drop in prices. Yard men report the consumers as well cared for for the remainder of the year and not interested in 1921. Cast as well as steel feels the effect of that disposition and no early improvement is expected.

We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

Old steel rails	$19.00 to $20.00
Heavy melting steel	18.00 to 19.00
No. 1 cast	30.00 to 32.00
Car wheels	29.00 to 31.00
Tramcar wheels	28.00 to 30.00
No. 1 wrought	19.00 to 20.00
Stove plate	20.00 to 21.00
Cast iron borings	9.00 to 10.00
Machine shop turnings	9.00 to 10.00

St. Louis

ST. LOUIS, Oct. 18.

Pig Iron.—The lack of disposition to enter into pig iron transactions has continued during the past week, and furnace representatives feel that there is little likelihood now of any activity until after the election, if then. The chief reason continues to be that the melters have on hand or under contract for delivery sufficient material to obviate the necessity for making further purchases, although they are all active and are working for the most part up to capacity. The consumers of basic are as well supplied as their orders ahead warrant, and therefore are not entering the market.

Coke.—No transactions were reported in coke, although there was a slightly easier tone to the market with prices perhaps 50c. off from what they have been quoted. No by-product coke is available in this territory.

Finished Iron and Steel.—In finished products the lessening of immediate pressure to buy, together with improvement of deliveries, has lightened somewhat the burdens of the mill representatives. While there has been some impression that prices might be lowered, no reduction in quotations has been made, and with the present wide range between total orders and total deliveries none is expected by the larger interests, although it is understood that premium prices of independents have been modified, if not altogether eliminated. Stock out of warehouse continues to move as rapidly as it arrives at the last figures quoted.

We quote for stock out of warehouse as follows: Soft steel bars, 4.07½c.; iron bars, 4.50c.; structural material, 4.17½c.; tank plates, 4.37½c.; No. 10 blue annealed sheets, 7.27½c.; No. 28 black sheets, cold rolled, one pass, 8.20c.; No. 28 galvanized, black sheet gage, 9.70c.

Old Material.—The scrap market has been absolutely stagnant during the past week, no trading of any character appearing to ripple the surface. Not even the dealers are willing to trade with each other, and all interests are awaiting the next move. The unusually heavy lists which were put out last week by the railroads, aggregating something more than 10,000 tons, were a drug on the market, and most of the bids put in by dealers were figured with a view to rejection by the roads. To a very considerable extent this was successful, and it is likely that a good deal of the scrap offered in the lists referred to will reappear in the next lists to come out with the opening of November. It is also intimated that the November lists may be delayed to a date at least a few days after the election in the hope that better prices may be realized after politics is out of the way.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails	$31.00 to $31.50
Old steel rails, rerolling	32.00 to 32.50
Old steel rails, less than 3 feet	21.00 to 21.50
Relaying rails, standard section, subject to inspection	40.00 to 45.00
Old car wheels	33.00 to 34.00
No. 1 railroad heavy melting steel scrap	21.00 to 21.50
Heavy shoveling steel	19.50 to 20.00
Ordinary shoveling steel	19.00 to 19.50
Frogs, switches and guards cut apart	21.00 to 21.50
Ordinary bundled sheet	10.50 to 11.00
Per Net Ton	
Heavy axle and tire turnings	$12.00 to $12.50
Iron angle bars	27.00 to 27.50
Steel angle bars	19.00 to 19.50
Iron car axles	35.00 to 35.50
Steel car axles	29.00 to 29.50
Wrought arch bars and transoms	30.00 to 30.50
No. 1 railroad wrought	21.00 to 21.50
No. 2 railroad wrought	20.00 to 20.50
Railroad springs	20.00 to 20.50
Steel couplers and knuckles	20.00 to 20.50
Locomotive tires, 42 inches and over, smooth inside	17.00 to 17.50
No. 1 dealers' forge	16.00 to 16.50
Cast iron borings	11.00 to 11.50
No. 1 busheling	17.50 to 18.00
No. 1 boilers, cut to sheets and rings	14.00 to 14.50
No. 1 railroad cast scrap	30.50 to 31.00
Stove plate and light cast scrap	24.00 to 24.50
Railroad malleable	21.00 to 21.50
Agricultural malleable	20.00 to 20.50
Pipes and flues	14.00 to 14.50
Railroad sheet and tank scrap	12.50 to 13.00
Railroad grate bars	21.00 to 21.50
Machine shop turnings	7.50 to 8.00
Country mixed scrap	16.00 to 16.50
Uncut railroad mixed scrap	17.00 to 17.50
Horseshoes	23.00 to 23.50
Railroad brake shoes	17.00 to 17.50

Cincinnati

CINCINNATI, Oct. 19.

Pig Iron.—The market continues dull, with inquiries confined almost exclusively to carload lots of special irons for fill-in purposes. The largest sale reported in this district during the week was one of 200 tons of Southern foundry iron to a Kentucky melter at the prevailing market, $42, Birmingham. A few sales of Northern iron, ranging from carloads to 100 tons, were made at $46, furnace base. While the nominal quotation for 8 per cent silvery iron is $60, furnace, a sale of 100 tons was made to an Illinois melter last week at $58, furnace, and this figure probably better represents the market than the higher one. Reports are also current of lower prices in basic irons. In this connection, a consumer in this territory is reported to have purchased several hundred tons of Southern basic in which the freight was from the furnace to the purchaser's plant, was absorbed by the seller. Manganese differentials are also being given away in some instances. Some consumers are attempting to cancel their contracts but in most instances furnaces are insisting that they be carried out. Movement of pig iron from fur-

naces in this district and the South slowed up considerably during the week, and in some cases iron is now being piled on the furnace yards. Several Kentucky and Tennessee furnaces went out of blast and it is reported that a number of stacks in southern Ohio will follow suit during the next two weeks.

Based on freight rates of $4.50 from Birmingham and $2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base price)	$46.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	47.75
Ohio silvery, 8 per cent sil.	60.52
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	48.52
Basic Northern	48.52
Malleable	48.52

Finished Material.—The demand for finished materials, with the exception of wire products, is slow. Some inquiries are being received for small lots of steel bars, and outside of the Steel Corporation, 3.25c. is being quoted. One of the leading independent companies has quoted this price on first quarter delivery on an inquiry for several hundred tons. It is reported that the leading interest has booked an order for 500 tons of bars for delivery during the first half of next year at 2.35c. base. The sheet market is quiet, and while the mills in this district are reported to be sold up for the last quarter, some cancellations are being received and a little tonnage is available, which is being disposed of at the current prices. It is reported that one mill has reduced prices on black sheets from 7.50c. to 7.25c. Shipments from sheet mills are improving greatly and jobbers are able to stock sheets for the first time in many months. The market for structural shapes is quiet, the only inquiry reported being from the Big Four Railroad for some bridge work, the tonnage amounting to about 100. Reinforcing bars are scarce, as are bars, both iron and steel, under 1 in. Warehouses report business as showing up materially, transactions being conducted on a hand to mouth basis. Stocks are in better shape now than for some time, but even with improved shipments, some warehouses are now carrying only about one-third their normal quantities. Prices, which were revised downward two weeks ago, remain unchanged, jobbers quoting:

Steel bars, 4c. base; shapes, ¼-in. and heavier, 4.10c.; plates, 4.50c.; cold rolled rounds, 1½-in. and over, 6.25c.; cold rolled rounds, under 1½-in., and flats, squares and hexagons, 7c. base; steel bands, 6c. base; No. 10 blue annealed sheets, 7c. base; Nos. 14 and 16 blue annealed sheets, 7½c. base; black sheets, 28-gage, 9 to 10c.; galvanized sheets, 28-gage, 10c. to 11c.; wire nails, $4.50 per keg base.

Coke.—The coke market shows a softer tone. Spot furnace coke from the Wise county field is being offered at $14.50, and it is reported that contracts can be made for first half of next year at $12. Foundry coke from this district, however, is still quoted at $18. Connellsville furnace coke is quoted at $17 to $17.50 and foundry at $18. For first half of next year, Connellsville furnace coke is offered at $15, but furnaces generally consider this price too high. The local market is quiet.

Old Material.—The scrap market continues dull. Very little trading is being done, although we note a sale of several hundred tons of cast borings to a dealer, the price not being disclosed. Prices remain as quoted last week, being largely nominal.

We quote dealers' buying prices:

	Per Gross Ton	
Bundled sheets	$12.50	$13.50
Old iron rails	25.50	26.50
Relaying rails, 50 lb. and up	49.50	50.50
Rerolling steel rails	30.50	31.50
Heavy melting steel	20.50	21.50
Steel rails for melting	21.50	22.50
Car wheels	35.50	36.50
	Per Net Ton	
No. 1 railroad wrought	22.50	23.50
Cast borings	9.50	10.00
Steel turnings	8.00	8.50
Railroad cast	31.50	32.50
No. 1 machinery	34.50	35.50
Burnt scrap	21.50	22.50
Iron axles	34.00	34.50
Locomotive tires (smooth inside)	22.00	23.00
Pipes and flues	13.50	14.00
Malleable cast	23.50	24.00
Railroad tank and sheet	13.50	14.00

Tool Steel.—The market is very quiet. The only buying being done is for immediate requirements. Prices remain unchanged for 18 per cent tungsten high speed steel, $1.25 per lb. being the prevailing quotation, with 10 per cent off for large quantities being quoted by some companies.

The American Pig Iron Association met at the Sinton Hotel, Cincinnati, Tuesday, Oct. 19. The business session was held in the morning. The members of the association present were the guests of Rogers, Brown & Co. at noon luncheon at the Cincinnati Country Club, the afternoon being spent on the golf links.

New York

NEW YORK, Oct. 19.

Pig Iron.—A sale of 5000 tons of foundry and malleable iron for first quarter delivery to a car and equipment company is reported as having been made by a Buffalo producer, and a New Jersey foundry is in the market for 2000 tons of foundry iron for first quarter. These are the only tonnages of any size reported during the past week, which has been extremely dull as far as furnace sales are concerned. There has, however, been considerable activity among foundries in trying to resell iron bought all the way from $27 to $35, and now offered at various prices below the furnace quotations. Some foundries which approached brokers with propositions to sell afterward decided not to do so. The slow delivery of coke is still causing trouble and a new furnace in eastern Pennsylvania, which recently blew in, has been compelled to operate at reduced blast on account of not being able to obtain enough coke to meet its requirements.

We quote for delivery in the New York district as follows, adding to furnace prices $2.52 freight from Eastern Pennsylvania, $5.46 from Buffalo and $6.16 from Virginia, the lower prices being on resale iron.

East. Pa., No. 1 fdy., sil. 2.75 to 3.25	$52.52 to $55.52
East. Pa., No. 2X fd., sil. 2.25 to 2.75	50.77 to 53.77
East. Pa., No. 2 fdy., sil. 1.75 to 2.25	49.52 to 52.52
Buffalo, sil. 1.75 to 2.25	49.46 to 54.46
No. 2 Virginia, sil. 1.75 to 2.25	54.16

Ferroalloys.—Demand for ferromanganese is confined to small lots. This has been recently satisfied by resale alloy, which has gone at an equivalent of $155, seaboard. Limited quantities of resale metal are still available at this level. Quotations are unchanged on a basis of $170, seaboard, for both the foreign and domestic product. Whether the coal strike in Great Britain will affect exports to this country remains to be seen and will depend upon the duration of the strike. The spiegeleisen market is quiet and unchanged at $80 to $82.50 for the low and high grade material respectively. There has been an offer by consumers of manganese ore of 42c. per unit, seaboard, for several thousand tons, but this has proved entirely uninteresting, the last sale having been made at between 50c. and 55c. per unit. There is no change in the 50 per cent ferrosilicon market, quotations remaining at $75 to $80 per ton, delivered.

Finished Iron and Steel.—New developments in the steel market are few, and such as they are tend to emphasize the expectations of buyers that prices quoted by independent mills will go lower. A large buyer of tank steel, for example, has issued an inquiry for 3000 to 4000 tons of 3/16 to ½ in. plates for prompt delivery, but states that in all probability the business will not be placed unless a sufficiently low price is quoted. On such an attractive specification a few mill representatives admit that it may be possible to get a quotation as low as 3c., Pittsburgh, though 3.25c. remains nominally as the quotation of the independent mills on the smaller lots which figure in current business. One or two jobbers are reported to be buying plates, possibly resale, at around 3c., Pittsburgh. A further easing in bars and sheets is in evidence. Bars in all sizes are now quite freely offered at 3.25c., Pittsburgh, or at least this price would be acceptable to certain mills on a desirable specification. The change in the situation on sheets is the offering of the lighter gages, which for some time past have been difficult to get. Black sheets are weaker, and all gages are now quoted

at from 6.50c. to 6.75c., Pittsburgh; blue annealed sheets are quoted at 5c. for heavy gages and 5.25c. to 5.50c., Pittsburgh, for light gages, while galvanized sheets are quoted at 8c. to 8.25c., Pittsburgh. Some in the steel trade are hopeful that a better export inquiry will result from the suspension of manufacturing in England due to the coal miners' strike. The expectation is that buyers in other countries, whose orders have been placed with British steel mills, will place substitute orders in this country. Two large export inquiries for plates are being figured on, one for 7000 tons for China and another for 3000 tons for Japan, but it is not certain that the orders will be placed. The most encouraging sign of business resumption is the placing of orders for a total of 3700 cars within the past few days. Of these, the Wheeling & Lake Erie Railroad has bought 3000, divided as follows: Standard Steel Car Co., 1500 steel gondolas of 50 tons capacity; Pressed Steel Car Co., 500 steel gondolas of 50 tons capacity, and 500 box cars; American Car & Foundry Co., 500 box cars. The Western Pacific Railroad has placed 700 50-ton composite cars with the Pressed Steel Car Co. At a time when building projects for spring are expected to come into the market, the situation as to structural steel is one of comparative quiet, but the trade is hopeful that a fair volume of inquiry will come out after election. Contract awards include: 1400 tons for the International Mercantile Marine Building to A. E. Norton; 250 tons for a coal bunkeer, Plaza Hotel, New York, to Hay Foundry & Iron Works; 400 tons for five crane bridges for three Government Navy Yards to the American Bridge Co., and 1100 tons for bridge repairs for the New York Central to unnamed fabricators. Philadelphia is in the market for a highway bridge, taking 200 tons. No decision has been made on 400 tons for the Central Railroad of New Jersey and a Masonic temple project at Danville, Va., has been abandoned.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.73c. to 3.88c.; plates, 3.03c. to 3.63c., the minimum prices being for indefinite delivery and the highest prices for delivery in a few weeks; shapes, 2.83c. when purchased from the United States Steel Corporation and 3.48c. when purchased from other producers; bar iron, flats, wider than 6 in., 5.38c., with half extras; light rounds, squares and flats, 5.88c. with full extras, and other sizes, 4.88c., with half extras.

Warehouse Business.—The situation is unchanged in most materials. Numerous warehouses report about the same volume of orders as usual, but the total tonnage purchased is less than half of the average. Shipments from mills continue to fill up depleted stocks, but the range of sizes is not large. Quotations on non-ferrous metals continue to decline. Warehouses carrying brass and copper stocks have reduced quotations about 1c. per lb., but these prices are still to a great extent nominal. Wrought iron and steel pipe is the most active of any material, and dealers foresee no price changes in this commodity for some time, in view of the acute shortage.

High Speed Steel.—Buying is slack, regular customers now being content with much smaller orders than formerly. Despite sluggish conditions, domestic producers quote $1.25 per lb., New York, for 18 per cent tungsten high speed steel, with contracts at lower prices.

Cast Iron Pipe.—Raw material continues to become easier, but labor is still a serious obstacle to production. No large municipal contracts are in sight for this year, but shops are well filled with back orders for several months to come. Although a few manufacturers are quoting slightly higher prices, we quote f.o.b., New York, 6 in. and larger, $77.22; 4 in., $87.22; 3 in., $97.22, with $2 additional for Class A and gas pipe.

Old Material.—The market is declining at the same pace that has existed for the past few weeks. However, many dealers are refusing to part with their holdings, believing that next month prices will become stiffer. Practically all buying now is to fill old orders. The British coal strike has tended to further curtail exports of old material to Great Britain and has caused some cancellations. A prominent New York broker has reduced buying prices in practically all items on his list from 50c. to $1, and in some cases as much as $2. Heavy melting steel is off 50c. While No. 1 yard wrought is quoted by some brokers at $19 to $20, at least one local sale is reported at a little better than this price. Quotations to local foundries have fallen off from 50c. to $1.50 per ton with some dealers, but a number are holding to last week's prices, anticipating no greater volume of business at a lower figure.

Buying prices per gross ton, New York, follow:

Heavy melting steel	$18.50 to $19.00
Rerolling rails	31.00 to 31.50
Relaying rails, nominal	55.00 to 56.00
Steel car axles	28.00 to 29.00
Iron car axles	43.00 to 44.00
No. 1 railroad wrought	23.00 to 24.00
Wrought iron track	18.50 to 19.00
Forge fire	11.00 to 11.50
No. 1 yard wrought long	19.50 to 20.50
Light iron	9.00 to 10.00
Cast borings (clean)	16.50 to 17.00
Machine-shop turnings	13.00 to 13.50
Mixed borings and turnings	13.00 to 13.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	16.00 to 17.00
Stove plate	23.00 to 24.00
Locomotive grate bars	23.00 to 24.00
Malleable cast (railroad)	24.00 to 25.00
Old car wheels	35.00 to 36.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast	$37.50 to $38.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	37.50 to 38.50
No. 1 heavy cast, not cupola size	27.00 to 28.00
No. 2 cast (radiators, cast boilers, etc.)	27.00 to 28.00

Philadelphia

PHILADELPHIA, Oct. 19.

The iron and steel markets have come almost to a dead stop, so far as new business is concerned. Sellers have booked little or no tonnage in the last week, this applying to steel, pig iron, ferroalloys and scrap, all of which are extremely quiet. Prices show relatively little change, but such as there is tends toward lower levels.

The Standard Oil Co. of New Jersey, which recently issued an inquiry for 3000 or 4000 tons of tank plates for prompt shipment, has received several quotations of 3.25c., Pittsburgh, but has also received bids of 3c., and if the business is placed it will undoubtedly be around the latter figure, though there has been an apparent effort on the part of independent plate producers to prevent the plate price from going below 3.25c. It is now admitted by sellers that a desirable specification could be readily placed at 3c. Steel bars are easier to obtain at 3.25c., Pittsburgh, for early shipment.

In pig iron the principal transactions are sales of small lots of resale iron at concessions of $2 or $3 a ton, but furnace quotations are virtually unchanged. The only new feature is that some Eastern furnaces which dropped out of the market some time ago are again willing to sell for prompt shipment, and their last quoted price, namely $50, again applies, this being $1 a ton under the peak price at which eastern Pennsylvania No. 2 plain iron has been sold.

Ferroalloys.—It is yet too early to determine what effect the British coal strike may have on shipments of British ferromanganese to the United States. Apparently American consumers are well supplied with ferromanganese. Resale lots are being offered at further concessions, sales of carloads having been made at $140 to $150, seaboard. American producers continue their price of $170, seaboard. Spiegeleisen is not in demand, and remains nominally at $80, furnace.

Pig Iron.—Some of the Eastern makers of foundry iron, who withdrew from the market at the height of the recent iron scarcity, are again willing to sell for prompt delivery, and their quoted price is $50, furnace, for No. 2 plain. These furnaces never went above $50, though others raised their quotations to a $51 base. One Eastern furnace, however, is quoting $49, furnace, on No. 2 plain, and $50, furnace, on No. 2X. Eastern Pennsylvania No. 2 plain iron can now be obtained at about $50.50, delivered Philadelphia, with No. 2X iron $1 or $1.25 higher. Resale iron, of course, is quoted at still lower figures, but the Eastern furnaces are not at this time showing any disposition to meet the prices quoted on resale iron. There virtually is no market to-day for pig iron, and there is no telling what prices might be gotten on a sizable tonnage. An Eastern furnace refused a buyer's offer of $48, delivered, for No. 2 plain iron.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace, but resale foundry iron can be had at about $2 below these prices:

East. Pa. No. 2 plain, 1.75 to 2.25	$50.54 to $52.54
East. Pa. No. 2X, 2.25 to 2.75 sil.	51.54 to 53.79
Virginia No. 2 plain, 1.75 to 2.25 sil.	53.74 to 55.74
Virginia No. 2X, 2.25 to 2.75 sil.	54.99 to 56.99
Basic deliv. Eastern Pa.	51.26 to 51.52
Gray forge (nominal)	47.10 to 48.50
Standard low phos. (f.o.b. furnace)	60.00
Malleable	51.50 to 53.40
Copper bearing low phos. (f.o.b. furnace)	57.00

Coke.—Some of the Eastern blast furnace companies have not yet contracted for next year's coke, and are worried over the continued high prices. The average cost of coke to-day to the Eastern furnace is $8 to $10, as most of them are getting only a part of the fuel that is due them on contracts and are forced to buy spot coke to fill out. New contracts, however, will raise the average coke cost to $12 to $14, according to present indications. It is believed that the export demand for coal and coke, resulting from the British coal miners' strike, will have a tendency to keep fuel prices up, and the longer the British strike lasts the less chance will blast furnaces have to obtain cheaper fuel. Spot furnace coke is to-day about $16 to $17, Connellsville.

Semi-Finished Steel.—There is no business in billets, but an Eastern mill has a quotation out on re-rolling slabs at $55, Pittsburgh. Billets are obtainable at the same price.

Rails.—The Philadelphia & Reading Railroad has made reservation with an Eastern mill for 15,000 tons of rails for next year. The price is to be determined later.

Plates.—Current sales of small lots of plates are mostly at 3.25c., Pittsburgh, but some mill representatives admit that a desirable specification would tempt them to quote 3c.; in fact, this price has been quoted on an inquiry for 3000 or 4000 tons of tank plates sent out by the Standard Oil Co. of New Jersey. The Standard Oil Co. also received several quotations of 3.25c. If the business is placed it will undoubtedly be at not more than 3c. Eastern mills report a slightly better demand for plates, but few orders are being placed, and tonnages are small. We quote sheared plates, ¼ in. and heavier, at 3.25c., Pittsburgh.

Structural Material.—The market is extremely quiet. Independent mills continue to quote 3.10c., Pittsburgh, but little business is being placed.

Old Material.—Prices continue to decline. Sales of No. 1 railroad wrought were at $3 below the previous week's quotations. Other grades show declines of $1 or more per ton. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$23.00 to $23.50
Steel rails, rerolling	37.00 to 38.00
No. 1 low phos., heavy 0.04 and under	32.00 to 33.00
Car wheels	40.00 to 42.00
No. 1 railroad wrought	28.00 to 29.00
No. 1 yard wrought	25.00 to 26.00
No. 1 forge fire	17.50 to 18.00
Bundled skeleton	17.50 to 18.00
No. 1 busheling	20.00 to 21.00
No. 2 busheling	17.00 to 18.00
Turnings (short shoveling grade for blast furnace use)	18.00 to 19.00
Mixed borings and turnings (for blast furnace use)	17.00 to 17.50
Machine-shop turnings (for rolling mill and steel works use)	18.00 to 19.00
Heavy axle turnings (or equivalent)	20.00 to 21.00
Cast borings (for rolling mills)	22.00 to 23.00
Cast borings (for chemical plants)	24.00 to 25.00
No. 1 cast	39.00 to 40.00
Railroad grate bars	29.00 to 30.00
Stove plate (for steel plant use)	26.50 to 27.00
Railroad malleable	27.50 to 28.50
Wrought iron and soft steel pipes and tubes (new specifications)	21.00 to 22.00
Iron car axles	45.00 to 46.00
Steel car axles	42.00 to 44.00

Sheets.—The lighter gages are more freely offered, which is significant, as thin sheets have until recently been difficult to get. Blue annealed is offered at 5c. for heavy gages and 5.25c. to 5.50c., Pittsburgh, for light gages. Black sheets are offered at 6.50c. to 6.75c., the former price being a recent concession by some makers in the Pittsburgh-Youngstown district. Galvanized sheets are offered at 8c. to 8.25c.

Bars.—Steel bars are somewhat easier to obtain at 3.25c., Pittsburgh. Small orders or orders for small sizes only probably would not be accepted at this price, but a desirable specification would find more than one mill ready to accept 3.25c. Other independent mills continue to quote 3.50c., and this is the top of the market. Bar iron is quoted by the leading active Eastern producer at 4.50c., Pittsburgh, but a mill in another district has been making some sales at 4.25c., Pittsburgh.

Cleveland

CLEVELAND, Oct. 19.

Iron Ore.—Ore shipments continue heavy, and the vessel dispatch is fairly good, although boats are still being delayed somewhat at Lake Erie ports waiting for cars. Some of the shippers are well up on their schedules and others a little behind. While a few of the consumers have asked that their ore be carried over until next year, most buyers want to take all that is coming on their contracts. No new inquiries for ore have come out and sellers still insist that there is no danger of a shortage.

We quote delivered lower Lake ports: Old range Bessemer, $7.45; old range non-Bessemer, $6.70; Mesaba Bessemer, $7.20; Mesaba non-Bessemer, $6.55.

Pig Iron.—The market is very dull and weak, and the limited activity that exists is confined mostly to the resale iron. The price situation is not well defined, as there is considerable range in resale prices and sellers in some cases are asking for offers rather than naming prices. The price uncertainty applies particularly to basic iron, and some of the leading producers are free to admit that they do not know what the basic market is at present. One broker is still asking $46 for resale basic iron, but a 700-ton lot resold by a northern Ohio consumer is understood to have sold at a considerably lower price. Furnaces continue to quote foundry iron at $47 for No. 2. We note the sale of 500 tons and a few small lots on this basis by Valley furnaces for the last quarter delivery. A Springfield, Ohio, consumer is understood to have purchased 1500 tons of resale foundry iron at $42, and some has been offered at $43. The slowing down in foundry and steel plant operations has resulted in additional holdups of shipments, but most furnaces so far have been able to ship practically all their iron. With present high production costs furnace men declare that they will pile very little iron and that if they cannot move their product they will put their furnaces out of blast.

We quote delivered Cleveland as follows, based on the new freight rates, these being a 56c. switching charge for local iron, a $1.96 freight rate from Valley points, a $3.36 rate from Jackson and $6.67 from Birmingham:

Basic	$44.96 to $47.96
Northern No. 2 fdy., sil. 1.75 to 2.25	48.96
Southern fdy., 2.25 to 2.75	49.92
Ohio silvery, sil. 8 per cent	61.36 to 63.36
Standard low phos., Valley furnace	$58.00 to 59.00

Finished Iron and Steel.—The market continues very dull, with consumers buying only to cover their needed requirements and sales limited mostly to steel bars. No releases of steel held up by the automobile industry are reported. Steel bars are softer, the 4c. price having disappeared. Independent mills now quote steel bars at 3.25c. to 3.50c. Plates are generally quoted at 3.25c. and some mills that have been asking a differential for boiler plates are now quoting the same price for boiler and tank steel. For a round lot a 3c. price would probably not be hard to find. An Ohio tank shop is inquiring for 1500 tons of plates for oil tanks. Structural material is generally quoted at 3.10c. by independent mills, but the demand is very light and mills are in need of orders. Bids will be taken shortly for the Belle Island bridge, Detroit, requiring 3000 tons of structural steel material and 500 tons of reinforced bars. No new building work has developed. Hard steel bars are still quoted at 3.75c., but the market on these is not firm and an attractive lot would probably bring out a lower price. The Wheeling & Lake Erie Railroad has placed 1000 box cars and 2000 gondola cars. The

Pressed Steel Car Co. was awarded 500 of each, the American Car & Foundry Co. 500 box cars, and the Standard Steel Car Co. 1500 gondola cars. There is no demand for semi-finished steel.

Cleveland warehouses quote steel bars at 3.34c. to 3.84c.; plates, 3.64c., and structural material, 3.44c.; No. 9 galvanized wire, 4.70c.; No. 9 annealed wire, 4c.; No. 28 black sheets, 8.50c.; No. 28 galvanized, 9.50c.; No. 10 blue annealed, 7c.

Sheets.—Mills report a fair volume of inquiry for sheets, but very little business is being placed. However, some mills have taken on enough business to take up the surplus canceled by the automobile manufacturers. For one pass box annealed sheets, 6.25c. appears to be the maximum price and quotations as low as 6c. are reported. Blue annealed sheets now are generally quoted at 5c. base for the heavier gages and 5.25c. to 5.50c. for the lighter gages. Automobile body sheets are still quoted nominally at 7.85c., there being no inquiries to test prices.

Coke.—Two producers are offering standard Connellsville foundry coke at $15 for first half contract and some foundries are placing contracts on that basis. For prompt shipment, Connellsville foundry coke is quoted at $18 to $18.50. Some resale foundry coke has brought $18. Furnace coke is softer, being quoted at $16 to $16.50 for prompt shipment.

Bolts, Nuts and Rivets.—The demand for bolts and nuts is confined largely to small orders for early requirements. Some inquiries are coming from the railroads for bolts and nuts for repair work. Prices are being maintained. Inquiry for rivets is light. Manufacturers are not catching up on orders to any extent, and plant operations are handicapped by the scarcity of steel, due to lack of cars for making shipments from Pittsburgh district mills.

Small machine bolts, rolled threads, 25 to 10 per cent off list; same sizes in cut threads, 25 per cent off list; larger and longer sizes, 25 per cent off list; carriage bolts, smaller and shorter, rolled threads, 20 and 10 per cent off; cut threads and larger and longer sizes, 20 per cent off list; lag bolts, 40 per cent off list; plow bolts, Nos. 1, 2 and 3 head, 25 per cent off list, the 20 per cent extra for other style heads being unchanged; machine bolts, both smaller and shorter, and larger and longer sizes, 10 per cent off list; hot pressed sq. and hex. blank nuts, 50c. off list; tapped nuts, list; cold pressed sq. and hex. blank nuts, list plus $1; semi-finished hex. nuts, 40 per cent off list.

Old Material.—The scrap market continues very dull and weak. Prices on heavy melting and several other grades are lower. Both the consumption and production of scrap have fallen off considerably. Mills, generally, have good stocks in their yards, and there is practically no demand from consumers. Trading is almost wholly confined to transactions between dealers who are still filling old orders. Some dealers are far behind on shipments because of transportation conditions. Permits for the shipment of scrap to the McKinney Steel Co. have been refused for several days owing to the congestion of material at this plant. One dealer is offering $11 for machine shop turnings. In the absence of transactions, some of the quotations are nominal.

Dealers quote delivered consumers yards in Cleveland and vicinity, as follows:

Heavy melting steel	$24.00 to $25.00
Steel rails, under 3 ft	27.00 to 28.00
Steel rails rerolling	38.00 to 39.00
Iron rails	31.00 to 32.00
Iron car axles	41.00 to 42.00
Low phos. melting scrap	26.00 to 27.00
Cast borings	16.00 to 16.50
Machine shop turnings	11.75 to 12.00
Mixed borings and short turnings	16.00 to 16.50
Short turnings for blast furnaces	16.00 to 16.50
Compressed steel	21.50 to 22.00
Railroad wrought	28.00 to 29.00
Railroad malleable	31.50 to 32.00
Steel axle turnings	21.00 to 21.50
Light bundled sheet stampings	14.00 to 14.50
Drop forge flashings over 10 in	17.50 to 18.00
Drop forge flashings under 10 in	17.50 to 18.00
No. 1 cast	30.00 to 32.00
No. 1 busheling	19.00 to 20.00
Railroad grate bars	28.00 to 29.00
Stove plate	27.50 to 28.00
Cast-iron wheels	39.00 to 40.00
Pipes and flues	23.50 to 24.00

Coal Strike and British Market

Furnaces Banked and Steel Plants Shutting Down—Business at a Standstill

(*By Cable*)

LONDON, ENGLAND, Oct. 19.

Most blast furnaces were banked yesterday when the coal strike began, and many steel works have shut down, including Consett Iron Co., Ltd.; William Whitwell & Co., Ltd., and Palmers Shipbuilding & Iron Co., Ltd. Most Sheffield plants had given their men notices to terminate contracts next Saturday and a complete stoppage is probable in a fortnight. The general labor situation is grave. The funds of the miners will last six or seven weeks, and therefore public opinion is that the strike will be limited to that period. It is unsafe to place reliance on this, since labor is desirous of forcing war upon capital and railroad men are urged by leaders to strike because of labor's serious position if the miners are defeated. The Government has ordered the industrial use of fuel, gas and electricity for power reduced one-half. Co-operative wholesale societies are supporting the strikers by granting them indefinite credit for food and other necessaries, and by accepting credit notes from unions instead of cash.

Business in the meantime is at a deadlock, and prices are nominally unchanged, but trading is suspended. Fair tonnages of Belgian and Luxemburg pig iron have been sold to British steel works. American sheet bars have been offered at £15, c.i.f. Foreign competition is increasing, and buyers are finding that they can rely upon deliveries, but difficulties are occasionally met in the banks taking up documents.

Holland and Japan have placed orders for armor plate at Sheffield. Belgian 2-in. billets have sold at £16, f.o.b. Welsh sheet bars have been reduced £2 10s. to £21, delivered. The tin plate market is weak on the fall in steel. Many tin plate and galvanized sheet mills are closing this week. New bookings are trifling, and there are many reports of cancellations.

The Thoresen line of Christiania has cancelled an order for four steamers to be built in British yards.

We quote per gross ton except when otherwise stated, f.o.b. maker's works, with American equivalent figured at $3.44 for £1, as follows:

Ship plates	£26	0	to	£33	0	$89.44	to	$113.72
Boiler plates	30	0	to	35	0	103.20	to	120.40
Tees	26	10	to	31	0	89.44	to	106.64
Channels	25	15	to	30	5	88.58	to	104.06
Beams	25	10	to	30	0	87.72	to	103.20
Round bars, ¾ to 3 in.	28	0	to	33	0	96.32	to	113.72
Rails, 60 lb. and up	25	0	to	27	0	86.00	to	92.88
Billets	20	0	to	21	0	68.80	to	72.24
Sheet and tin plate bars, Welsh	21	0				72.24		
Galvanized sheets, 24 g.	38	0	to	40	0	130.72	to	137.60
Black sheets, 24 g. to 26 g.	50	0	to	54	0	172.00	to	185.76
Tin plate base box*	2	6				7.91		
Steel hoops	38	15	to	39	0	133.30	to	134.16
Cleveland basic iron	11	15				40.42		
West Coast hematite	15	15				54.18		
Cleveland No. 3 foundry	11	5				38.70		
Ferromanganese	35	0	to	40	0	120.40	to	137.60
Coke	3	2¾				10.79		

*Prompt delivery and nominal; for January, 47s. ($8.08).

Many Plants Shut Down—Belgium a Competitor —Weakness in Galvanized Sheets

LONDON, ENGLAND, Oct. 8.—The industrial position throughout this country is such, however, that the works in a very large number of cases would welcome a strike, partly because the attitude of labor has become almost intolerable. It is useless blinking the fact that the coal owners have offered a substantial concession to the miners and that the latter might be well advised in their own interests in taking what is offered. The stumbling block, however, is that the labor leaders here are determined that there shall be no payment by result, in other words that employers shall be forced to

pay an excessively high wage whether the man receiving it does a day's work or simply spends his time in loafing. Loafing indeed has developed into a fine art all over the country, and it is difficult to see how the willingness to work is to be revived. The solution of manufacturers' problems here hinges mainly upon the adoption of a system of payment by results, and unless this can be established in some form or other, industrial stagnation is absolutely certain.

Business in pig iron has been hampered by the threats of the coal strike. Home consumers seem to have fair quantities in stock, but there is an entire suspension of business for export. Furnaces as a rule are working badly, and turning out too much of the lower grades, while the outlook for an improvement in this respect is not brilliant, although small lots of mottled and white iron, which are comparatively plentiful, are being shipped abroad. Business in hematite has been exceedingly limited, and there is nothing available for overseas customers. Spanish rubio, c.i.f. Middlesbrough, has been firming up lately, mainly because of the freight position being affected by the coal crisis.

Thoughout the finished industries trade may be said to be at a standstill. Following upon the disruption of the eastern and far eastern markets there has been an entire cessation of new buying from these quarters, while lots of resale parcels have come on offer. Another thing is that buyers will no longer pay the fantastic prices demanded, while competition from the continent is undoubtedly developing, and may ultimately prove an important factor.

Belgium is certainly getting back to work rapidly, and one of the largest plants has now a representative visiting this country for the purpose of booking contracts both for early and far forward delivery, the prices named being pounds below those which England works are asking. An illustration is to be found in the fact that whereas the Welsh steel bar makers have been sticking to £23 10s delivered as their price for sheet bars and tinplate bars, Belgian works have actually sold at £18 delivered in the English Midlands, and since then have closed a contract at £16 f.o.b. Antwerp. Cheap raw material is an imperative necessity, but we shall expect to hear that the government may take steps to interfere with imports.

Among the weak spots in the market at present is galvanized sheets which are practically unsalable, and it is exceedingly doubtful whether works as a whole have during the past couple of months been booking as much as 25 per cent of their capacity, even though they have made severe cuts in prices to secure orders. From £52 to £53 a ton for 24 gage, which was paid earlier in the year, the price has slumped to £39, which figure was paid this week for a small parcel, and in all probability business could be done for anything like a decent quantity at less than this. On the other hand some makers declare that rather than accept £40 they will close down. Already many mills have been put out of action and the trouble is spreading rapidly. The Ebbw Vale Co. last night closed down the whole of its plant with the exception of one mill, and in the Sheffield and Midland districts thousands of hands are being thrown out. Aeroplane works are having a very bad time and so are the motor people. The war profits of the aeroplane manufacturers are illustrated by the statement made at the meeting of the creditors of the Sopwith company, whose capital was £26,000. During the war it piled up a reserve of more than £900,000, and when it went into liquidation its liabilities were given as £705,000 and its assets as £862,000. The liabilities include £583,000 for excess profits duty, and during its existence the company actually paid to the government £450,000 in excess profits duty. The Grahame White Co., Ltd., has now closed down its motor body department, which has involved the dismissal of a large number of hands.

New big government loans are now talked of. It remains to be seen if people will put up further scores of millions to be poured down the gutter in riotous waste and profligate extravagance. "Frenzied Finance" has played havoc already which a score of generations cannot repair.

FEARS SERIOUS RESULTS

Whiting Williams, Just Returned from Mines of England, Gives Views on Coal Miners' Strike

CLEVELAND, Oct. 19.—Whiting Williams, recently director of personnel, Hydraulic Steel Co., Cleveland, whose book, "What's On the Workers' Mind?" has just appeared, giving the diary of his seven months as a common laborer in steel mills, and coal mines, has just returned from a similar experience in Great Britain. He expressed himself of the opinion that the coal strike is likely to prove a very serious obstacle to iron and steel production for a considerable period. As the basis of his opinion, he cited his close-hand contact with the coal miners during the summer. He said:

"In the colliery in South Wales where I worked with the other miners, I found most of them in a very bad mood. Under the leadership of acknowledged Bolshevists, most of the colliers or hewers were doing considerably less than a proper day's work; indeed, ca-canny methods were openly advocated as likely to induce the owners to turn the mines over to the Government. The whole field, with its 220,000 miners, was very unhappy. I heard more Bolshevism talked there in a few weeks than in my whole seven months among America's workers. Steel plants in the same districts I found complaining seriously about the quality of the coal they were getting. The dock workers were also bitter because the ports were filled with ships which were unable to get their bunkers filled. In Yorkshire I found the miners much more reasonable and contented; in fact, they voted against the strike. But as a whole the miners are certainly in a serious state of mind. They are led, too, by men definitely committed to Government ownership and operation of the pits. Inasmuch as the Government is still continuing its war-time control, the present protest is really against the Government and not against the private operators. As a result, the leaders are likely to find it extremely difficult to keep the strike from becoming a revolution.

"At the same time, the general public and, I would say, the majority of the steel and other workers I talked with feel that the Government ought to stand firm on its proposal to increase wages only on the recommendation of an unprejudiced study of the matter, especially as to the relation between wages and output.

"With both sides thus so firmly inclined, it appears highly probable that matters in the island will be worse before they are better, and that the 10,000 tons of steel rails now being made in this country for Glasgow will have considerable company on their way over."

The third annual sales convention and conference of the John F. Byers Machine Co., Ravenna, Ohio, was held at Glen Crest Hotel, Ravenna, Oct. 11 and 12, with all representatives in attendance, except Los Angeles and San Francisco. This company has under construction a new erecting shop, which will allow increased production for the manufacture of its auto-crane.

The Empire Machinery Exchange Co., Cleveland, which has been in business for the past 18 months, has been incorporated with a capital stock of $50,000. F. T. Brodie is president and W. C. Werley, secretary and treasurer. The company has leased 10,000 sq. ft. of warehouse space for handling second-hand machinery.

A new astronomical observatory containing equipment donated by Worcester R. Warner and Ambrose Swasey, of the Warner & Swasey Co., Cleveland, to the Case School of Applied Science, was dedicated Oct. 12. Mr. Warner and Mr. Swasey were among the speakers.

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin	Lead		Zinc	
October	Lake	Electrolytic	New York	New York	St. Louis	New York	St. Louis
13	17.00	17.00	39.70	7.50	7.25	7.50	7.50
14	16.75	16.75	38.75	7.50	7.15	7.50	7.35
15	16.50	16.50	38.25	7.25	7.00	7.50	7.35
16	16.25	16.25	.....	7.25	7.00	7.50	7.30
18	16.00	16.00	37.75	7.25	7.00	7.50	7.25
19	16.00	16.00	38.25	7.25	7.00	7.50	7.25

NEW YORK, Oct. 19.

There is hardly enough buying in any of the markets to establish values and the general tone is weak, but there is a feeling of optimism as to the future. Copper has continued to decline on further offerings but very few sales. The tin market is also lower, partly because of the British coal situation. Conditions in the lead market are not essentially changed except a reduction in the price of the leading interest. The zinc market is exceedingly quiet but a little lower. Antimony has declined.

New York

Copper.—Outside interests have continued to force the market down until copper has sold as low as 16.25c. to 16.37½c. and is quoted in some cases as low as 16c., New York. This is 1½c. lower than actual transactions a week ago. There is, however, almost no business. Some large producers are meeting these values whenever business is offered, but are not generally quoting. It is believed by some that the liquidation is over. Consumption still continues on a liberal scale but production is declining. On the New York Metal Exchange to-day 600 tons of electrolytic copper, in three lots of 200 tons each, was sold under the rule at 15.25c., 15.50c. and 15.52½c. respectively, all for spot delivery. We quote the market for both Lake and electrolytic more or less nominal at 16c., New York. An interesting statement is that sales for export have been fairly good and at prices considerably above the foregoing quotations.

Tin.—It is reported that a moderate business in future shipment tin was done last week by dealers and consumers, but as a whole the market has continued quiet and without feature. The British coal situation has resulted in bear raids in London on the tin market which have caused recessions of considerable amounts for all positions and the effect here has of course been sympathetic, although tin is a little cheaper in this market than in any market of the world. There are also indications of financial troubles in Holland and other localities. For the first week in some time there have been no sales reported on the New York Metal Exchange. We quote spot Straits tin to-day at 38.25c., New York, with the London market at £243 15s. per ton, which is a recovery of £3 5s. from the pronounced recession on Monday. Spot Straits tin is quoted to-day at £241 15s. and future standard at £247 10s., both representing recoveries of £2 to £3 from yesterday. Arrivals thus far this month have been 1565 tons with 5075 tons reported afloat.

Lead.—The market continues very quiet with the tendency downward. The principal feature was another reduction by the American Smelting & Refining Co. yesterday of ½c. per lb. to 7c., St. Louis, or 7.25c., New York, evidently brought about by a readjustment to the outside market, which had already touched these levels. We quote the market at 7c., St. Louis, or 7.25c., New York, for domestic lead. Imported lead can be bought around 7.25c., seaboard.

Spelter.—There is very little change in this market, transactions being confined to small lots for nearby delivery for which producers are obtaining around 7.25c., St. Louis, for domestic prime Western. While the same grade, imported and reshipped from England, is still obtainable at 7.50c., New York or seaboard, this is not so important a feature as recently. Producers in general continue to maintain a waiting attitude, believing in a better market in the near future. We quote the market at 7.50c., New York, as determined by imported metal and at 7.25c., St. Louis, for early shipment from the West.

Antimony.—The antimony market is quiet and lower at 6.50c. to 6.75c., New York, duty paid, for wholesale lots for early delivery.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by the leading interest at 32.90c. f.o.b. producer's plant, with the outside market for the same grade held at 28.50c. to 29.50c., New York.

Old Metals.—The market is paralyzed because of the uncertain conditions in new metals. Business is impossible and quotations are nominal. Dealers' selling prices are reported about as follows, though few can be found who will sell:

	Cents Per Lb.
Copper, heavy and crucible	16.00
Copper, heavy and wire	15.00
Copper, light and bottoms	13.00
Brass, heavy	11.00
Brass, light	8.00
Heavy machine composition	16.00
No. 1 yellow rod brass turnings	9.00
No. 1 red brass or composition turnings	13.00
Lead, heavy	6.75
Lead, tea	5.00
Zinc	5.75

St. Louis

OCT. 18.—The non-ferrous markets have been dull during the past week and weak, with the closing quotations Saturday as follows; in car lots: Lead, 7.12½c.; spelter, 7.30c. In less than car lots the quotations have been: Lead, 7.50c. to 7.62½c.; spelter, 7.80c. to 8c.; tin, 50c.; copper, 19c.; antimony, 9c. In the Joplin district ores have sagged with the prices of metal and zinc blende, lead and calamine were all lower with relatively small sales, the buyers evincing a disposition to stay out of the market, while the producers were also disinclined to sell except where they had to. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 6c.; heavy yellow brass, 8c.; heavy red brass, 11c.; heavy copper and copper wire, 11.50c.; light copper, 10c.; lead, 6c.; zinc, 4c.; tea lead, 3c.; tinfoil, 30c.; pewter, 24c.; aluminum, 15c.

Chicago

OCT. 19.—The markets are exceedingly quiet and all except spelter and antimony have shown further declines. Most of the old metal grades have also sagged. We quote Lake copper at 17.50c. in carload lots; tin, 40c.; lead, 7.25c.; spelter, 7.50c.; antimony, 8.50c. to 9c. On old metal we quote copper wires, crucible shapes, 10.50c.; copper clips, 10.50c.; copper bottoms, 9.50c.; red brass, 10.50c.; yellow brass, 7.50c.; lead pipe, 5.25c.; zinc, 4c.; pewter, No. 1, 20c.; tinfoil, 27.50c.; block tin, 30c.; all these being buying prices for less than carload lots.

Republic Iron & Steel Co. Earnings

The Republic Iron & Steel Co.'s report for the quarter ending Sept. 30 makes a very favorable showing. The net earnings after deducting for maintenance and repairs of plants amounting to $1,627,143.23 and provisions for excess profits taxes, etc., were $3,960,902.53. The net profits applicable to dividends were $3,306,873.06. After payment of dividends on preferred and common stocks amounting to $887,500, the surplus for the quarter was $2,419,373.06. Unfilled orders on hand, Sept. 30, were 333,889 tons, compared with 491,585 tons June 30.

The October meeting of the New York Chapter of the American Society for Steel Treating was held at the Engineering Societies Building, Wednesday evening, Oct. 20. G. A. Richardson, Midvale Steel & Ordnance Co., Philadelphia, exhibited moving pictures of the manufacture of steel.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	$0.35	St. Paul	0.695
New York	0.38	Omaha	0.815
Boston	0.415	Omaha (pipe)	0.78
Buffalo	0.295	Denver	1.35
Cleveland	0.24	Denver (wire products)	1.415
Cincinnati	0.33	Pacific Coast	1.665
Indianapolis	0.345	Pacific Coast, ship plates	1.335
Chicago	0.38	Birmingham	0.765
St. Louis	0.475	Jacksonville, all rail	0.555
Kansas City	0.815	Jacksonville, rail and water	0.46
Kansas City (pipe)	0.78	New Orleans	0.515

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in., angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 2.45c. to 3.10c.

Wire Products

Wire nails, $3.25 to $4.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.50 to $2 and shorter than 1 in., $2 to $2.50. Bright basic wire, $3.25 to $4 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3.25 as quoted by the American Steel & Wire Co., and No. 8 and heavier, $4 to $4.25, the range of independent makers; galvanized wire, $3.95 to $4.70; galvanized barbed wire and fence staples, $4.10 to $5.20; painted barbed wire, $3.40 to $4.60; polished fence staples, $3.40 to $4.50; cement-coated nails, per count keg, $2.85 to $4.10; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 55 to 58 per cent off list for carload lots, 54 to 57 per cent for 1000-rod lots, and 53 to 56 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$4.75 to $5.00 base
Large boiler rivets ..... 4.85 to 5.00 base
Small rivets .....45 to 40 per cent off list
Small machine bolts, rolled threads
40 and 5 to 25 and 10 per cent off list
Same sizes in cut threads.....30 and 10 to 25 per cent off list
Longer and larger sizes of machine bolts
30 to 25 per cent off list
Carriage bolts, ⅝-in. x 6-in.:
Smaller and shorter, rolled threads
30 and 10 to 20 per cent off list
Cut threads .....30 to 20 per cent off list
Longer and larger sizes.....25 to 20 per cent off list
Lag bolts .....45 to 40 per cent off list
Plow bolts Nos. 1, 2 and 3 head.....35 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.p.c. and t. nuts ⅝-in. x 4-in.:
Smaller and shorter.....30 to 10 per cent off list
Longer and larger sizes.....20 to 10 per cent off list
Hot pressed sq. or hex. blank nuts.....$1.50 to 50c. off list
Tapped nuts .....$1.00 off list
C. p. c. & t. sq. or hex. nuts, blank.....list plus $1.00
C. p. c. & t. sq. or hex. nuts, tapped.....list plus $1.00
Semi-finished hex. nuts, U. S. S. and S. A. E.:
⅝-in. and larger.....50 and 10 to 40 per cent off list
9/16-in. and smaller.....50 and 10 to 40 per cent off list
Stove bolts in packages.....60 and 10 per cent off list
Stove bolts in bulk.....60, 10 and 2½ per cent off list
Tire bolts .....50 per cent off list
Track bolts .....7c. base
Iron cap screws .....40 per cent off list
Set screws .....40 and 10 per cent off list
One cent per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs 25c. extra.
All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $57 to $75; chain rods, $57 to $75; screw stock rods, $62 to $80; rivet and bolt rods and other rods of that character, $57 to $75; high carbon rods, $80 to $100, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, $4 to $4.25 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ⅝-in. and 7/16-in., $4.40 to $5; 5/16-in., $5 to $5.75; track bolts, $7. Boat and barge spikes, $4.40 to $5 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, $3 to $4 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., $13.80 per package; 8-lb. coating, I. C., $14.10; 12-lb. coating, I. C., $15.80; 15-lb. coating, I. C., $16.80; 20-lb. coating, I. C., $18.05; 25-lb. coating, I. C., $19.30; 30-lb. coating, I. C., $20.30; 35-lb. coating, I. C., $21.30; 40-lb. coating, I. C., $22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. to 3.50c. from mill. Common bar iron, 4.75c.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld

Steel Inches	Steel Black	Steel Galv.	Iron Inches	Iron Black	Iron Galv.
⅛, ¼ and ⅜	47 to 50½	20½ to 24	⅛	15½ to 25½	+1½ to 11½
½	51 to 54½	36½ to 40	¼	19½ to 29½	1½ to 11½
¾ to 3	54 to 57½	41½ to 44	⅜ to 1½	24½ to 34½	8 to 18½

Lapp Weld

2	47 to 50½	34½ to 38	2	20½ to 28½	6½ to 14½
2½ to 6	50 to 53½	37½ to 41	2½ to 6	22½ to 30½	9½ to 17½
7 to 12	47 to 50½	33½ to 37	7 to 12	19½ to 27½	6½ to 14½
13 and 14	37½ to 41				
15	35 to 38½				

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	43 to 46½	25½ to 29	¼	+17	+50
½	48 to 51½	35½ to 39	⅜	13½ to 23½	6½ to+3½
¾ to 1¼	52 to 55½	39½ to 43	½	18½ to 28½	8½ to 15½
2 to 3	53 to 56½	40½ to 44	¾ to 1½	24½ to 34½	9½ to 19½

Lap Weld, extra strong, plain ends

2	45 to 48½	33½ to 37	2	21½ to 29½	8½ to 16½
2½ to 4	48 to 51½	36½ to 40	2½ to 4	23½ to 31½	11½ to 19½
4½ to 6	47 to 50½	35½ to 39	4½ to 6	22½ to 30½	10½ to 18½
7 to 8	43 to 46½	29½ to 33	7 to 8	14½ to 22½	2½ to 10½
9 to 12	38 to 41½	24½ to 28	9 to 12	9½ to 17½	5½ to+2½

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		*Charcoal Iron*	
1¾ to 1⅞ in.	+ 7 to — 19½	1½ to 1⅝ in.	+ 23
2 in.	+ 2 to — 19½	1¾ to 1⅞ in.	+ 20
2¼ to 2½ in.	3 to 30½	2 in.	+ 10 to 15
2¾ to 3¼ in.	11 to 30½	2¼ in.	+ 10 to 12
3½ to 4½ in.	20 to 40½	2½ in.	+ 1 to 10
		2¾ to 3¼ in.	— 1½ to + 3
		3½ to 4½ in.	—8 to list

Standard Commercial Seamless—Cold Drawn or Hot Rolled

	Per Net Ton		Per Net Ton
1 in.	$327	1¾ in.	$207
1¼ in.	267	2 to 2½ in.	177
1⅝ in.	257	2¾ and 3¾ in.	167
1½ in.	207	4 in.	187
		4½ to 5 in.	207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

Sheets

Prices of the Steel Corporation for mill shipments on sheets of United States standard gage in carloads and larger lots for indefinite delivery are given in the left-hand column. For reasonably prompt delivery, mills are getting up to the prices quoted in the right-hand column:

	Cents per lb.
Blue Annealed	
No. 8 and heavier	3.45 to 5.45
Nos. 9 and 10 (base)	3.55 to 5.50
Nos. 11 and 12	3.60 to 5.55
Nos. 13 and 14	3.65 to 5.60
Nos. 15 and 16	3.75 to 5.70
Box Annealed, One Pass Cold Rolled	
Nos. 17 and 21	4.15 to 6.80
Nos. 22 to 24	4.20 to 6.85
Nos. 25 and 26	4.25 to 6.90
No. 27	4.30 to 6.95
No. 28 (base)	4.35 to 7.00
No. 29	4.45 to 7.10
No. 30	4.55 to 7.20
Galvanized Black Sheet Gage	
Nos. 10 and 11	4.70 to 7.50
Nos. 12 to 14	4.80 to 7.60
Nos. 15 and 16	4.95 to 7.75
Nos. 17 to 21	5.10 to 7.90
Nos. 22 to 24	5.25 to 8.05
Nos. 25 and 26	5.40 to 8.20
No. 27	5.55 to 8.35
No. 28 (base)	5.70 to 8.50
No. 29	5.95 to 8.75
No. 30	6.20 to 9.00
Tin-Mill Black Plate	
Nos. 15 and 16	4.15 to 7.05
Nos. 17 to 21	4.20 to 7.10
Nos. 22 to 24	4.25 to 7.15
Nos. 25 to 27	4.30 to 7.20
Nos. 28 (base)	4.35 to 7.25
No. 29	4.40 to 7.30
No. 30	4.40 to 7.30
Nos. 30½ and 31	4.45 to 7.35

PERSONAL

Walter Pfaendler, engineer E. W. Bliss Co., Brooklyn, N. Y., is to deliver a paper on "Industrial Brooklyn" on Nov. 18 before the Brooklyn Engineers' Club, 117 Remsen Street, Brooklyn.

Marmaduke Wardlow, J. P., head of the firm of S. & C. Wardlow, steel manufacturers, Sheffield, England, is expected in New York early in November, and will be accompanied by his son, Lieut. Charles Wardlow. Mr. M. Wardlow was recently made senior warden of the Cutlers' Co., Sheffield, the occupant of which office usually finds himself in the position of master, at the end of 12 months, of the ancient Company of Cutlers of Hallamshire. The Cutlers' Co. grants trademarks and exerts authority and influence in Sheffield trades. Lieut. Wardlow served with the British forces in France during the war, was severely wounded and invalided home, but is now recovered.

Messrs. George L. Van Moppes and Joel L. Van Moppes, representing the L. M. Van Moppes Diamond Co., 665-671 Broad Street, Newark, N. J., will sail on the Rotterdam, Saturday, Nov. 6, to visit the principal European diamond markets to purchase rough diamonds and industrial diamond bortz for their firm.

H. L. Lautenschlaeger, formerly in charge of the material follow division, purchasing department and buyer of castings, Westinghouse Electric & Mfg. Co., East Pittsburgh, was recently appointed manager of production, George Cutter Works, South Bend, Ind., a subsidiary company. Mr. Lautenschlaeger has been connected with his present employer during the past 29 years.

Lee E. Ives, for the past three years assistant advertising manager Penton Publishing Co., Cleveland, publisher of the *Iron Trade Review* and other trade papers, has resigned to become associated with Clement K. Quinn & Co., Duluth, Minn., miners and shippers of Lake Superior iron ores. He will have charge of their sales office in the Kirby Building, Cleveland. Mr. Ives is a graduate engineer, having received his technical training at the University of Minnesota School of Mines, and the Michigan College of Mines at Houghton, Mich. Prior to his association with the Penton company he was connected in various capacities with the *Engineering and Mining Journal.* Before that and following his graduation, he was a member of the Mining Engineering Staff of the Biglow mines in the Michigan copper country. He also had charge of iron ore explorations on the Cuyuna Range in Minnesota. In leaving the publishing business, Mr. Ives steps into an industry for which he has been peculiarly well fitted both by education and experience. Clement K. Quinn & Co. operate a number of mines on the various Lake Superior iron ranges, including the Mahnomen on the Cuyuna, the Shada, Wisstar and Madrid mines on the Mesabi, and the Rolling Mill mine at Negaunee on the Marquette Range in Michigan. The grades of ore shipped from these mines cover a wide range both as regards analysis and structure, and the Mahnomen mine is a manganiferous open pit, from which several grades are shipped.

Lucius F. Arnold, for the past few years associated with the New England Butt Co., Providence, R. I., has resigned to become manager of the Motor Protection Co., Pawtucket, R. I.

W. D. Rock has sailed for Canada on the Empress of France. Mr. Rock has organized interests in Great Britain to undertake the establishment of an iron and steel industry at Vancouver, B. C.

F. Howard Sawyer, Fall River, Mass., manager Graton & Knight Mfg. Co., belting, has been made Philadelphia representative of that company.

D. B. Clark, whose affiliation with L. H. Mesker to form the Clark-Mesker Co., which has taken over the machine tool department of the Cleveland Milling Machine Co., was announced in recent issues of trade journals, is not general manager of the Cleveland Planer Co. and the Cleveland Machine Tool Co., as reported. Instead, W. B. Currier, Jr., is general manager of these two companies.

Robert R. Jenks has succeeded his father, Albert A. Jenks, as president of the Fales & Jenks Machine Co., Pawtucket, R. I. Albert A. Jenks continues as chairman of the board of directors.

P. T. Laws, has been promoted from the position of resident manager of the United States Cast Iron & Foundry Co., Scottdale, Pa., to that of assistant general manager of the company. He will continue to make his headquarters at Scottdale for the present. J. E. Tintsman, superintendent of the Scottdale plant, has been named to succeed Mr. Laws and Charles Seitz, formerly in charge of the mechanical department, has been appointed superintendent.

W. R. Webster, for the past 12 years assistant engineer of the Cambria Steel Co., Johnstown, Pa., has resigned effective Nov. 1, to accept a similar position with the Semet-Solvay Co., Syracuse, N. Y., which now is doing a structural steel business in addition to its regular by-product coke oven and coke oven by-products business.

W. C. Sutherland, formerly in charge of the Allenport, Pa. plant of the Pittsburgh Steel Products Co., has been named to succeed M. Wikstrom as superintendent of both of the company's plants, the other being located at Monessen, Pa. Mr. Wikstrom has gone abroad to study into European methods of making seamless tubes.

R. A. Harman, president of the Cleveland City Forge & Iron Co., has been elected president of The International Steel Tube Co. which is now building a plant in Cleveland, O. Mr. Harman succeeds W. P. Day, who has resigned.

Gordon Fox, formerly with the Fort Wayne Works of the General Electric Co., and lately electrical engineer of the Mark plant of the Steel & Tube Co. of America, has joined the staff of Freyn, Brassert & Co., engineers, Chicago, in the capacity of electrical engineer. Mr. Fox is chairman of the Chicago section of the Association of Iron and Steel Electrical Engineers.

Arden D. Holcomb, of A. D. Holcomb Co., engineers, will present a paper entitled "Sheet and Tin Plate Mills," at the regular monthly meeting of the Pittsburgh section of the Association of Iron and Steel Electrical Engineers, at Hotel Chatham, Saturday evening, Oct. 23. The paper will be a general survey of the sheet and tin plate field from an engineering point of view.

At a special meeting of stockholders of the William B. Pollock Co., Youngstown, Ohio, on Oct. 16, the code of regulations of the corporation was amended increasing the number of directors from five to eight. Members of the board now are Porter Pollock, W. G. Wilson, John Kirby, John H. Warne, Gilbert M. Tinney, Harry Payne, Alexander Best and Edgar J. Reilly, the last named four being new members. A vacancy had existed on the old board by reason of the death of C. W. McClure. Directors organized by electing William G. Wilson, president and treasurer; John H. Warne, vice-president and general manager; John Kirby, vice-president and general superintendent; Alexander Best, secretary, and making the following appointments—Harry Payne, director in charge of estimates; Edgar J. Reilly, director in charge of sales, and James T. Gilboy, purchasing agent.

L. E. Taylor has entered upon his new duties as assistant to L. A. Woodard, president of the Woodard Machine Co., Wooster, Ohio. Mr. Taylor was secretary to Harry L. Rownd, vice-president in charge of sales of the Republic Iron & Steel Co., Youngstown, Ohio and had previously served with Mr. Woodard for 12 years when the latter was manager of the old William Tod Co., Youngstown, which was later absorbed by the United Engineering & Foundry Co.

C. C. Thomas, formerly professor of mechanical engineering, Johns Hopkins University, Baltimore, has opened a consulting engineering office in Los Angeles, Cal.

E. John Hicks, president, Merchants' Steel & Sup-

ply Co., scrap iron and steel broker, 208 South La Salle Street, Chicago, has acquired full control of the company following the resignation of Theodore A. Schwengel, secretary and treasurer. Mr. Hicks was born in Ironton, Ohio, in 1881, and first entered the scrap business in 1903, with the Great Western Iron & Metal Co., Chicago. In 1907, he went in business for himself, and two years later became associated with the United States Metal & Mfg. Co., Chicago. Subsequently, he helped organize the James S. Miller Co., Chicago, and in 1913, was elected vice-president, the Merchants Steel & Supply Co. Upon the withdrawal of W. K. Kenly from the company in 1917, Mr. Hicks was elected president.

J. D. Corcoran, formerly works manager for the Hydraulic Pressed Steel Co., Cleveland, has been elected president of the Sharon Pressed Steel Co., Sharon, Pa., succeeding Josiah Kirby. Mr. Corcoran has been identified with the Sharon company for several months.

J. J. Beck has resigned as superintendent of the sheet mill department of the Youngstown Sheet & Tube Co., Youngstown, Ohio, to assume his new duties as vice-president in charge of mills and the galvanizing department of the Chapman-Price Steel Co., Indianapolis, Ind. On a 50-acre site on the outskirts of Indianapolis, the company is erecting a plant to contain four sheet mills, with annual capacity of 24,000 tons, and galvanizing and fabricating departments. It is expected to complete installation about Jan. 15, 1921. Edward S. Plott, foreman in the sheet department of the Sheet & Tube company, will be general superintendent of the Chapman-Price company's plant.

Robert C. Lea & Co., Philadelphia, make the following announcement: "With much regret on our part that he is no longer to be with us and with our best wishes, Richard Peters, Jr., has left us to become manager of sales for the Pulaski Iron Co. Rowland E. Lea will take the place in our organization which has hitherto been held by Mr. Peters."

John F. Stanton, Eastern sales agent Crucible Steel Co., and located at 2 Rector Street, New York, has resigned and is now associated with the John Illingworth Steel Co., Frankford, Philadelphia, and 217 Broadway, New York, as general sales manager. Mr. Stanton's headquarters will be at 217 Broadway, New York.

Henry D. Hibbard, consulting metallurgist and engineer, Plainfield, N. J., has returned from a three months' absence in Europe, largely on the Continent.

Frederic H. Tackaberry, vice-president American Steel Export Co., New York, returned to the United States on Oct. 16 after 14 months stay in Europe.

G. J. Keller, formerly district manager of the Buffalo office of the Knox Andreson Tool Co., has resigned and accepted a position as sales manager for the Frontier Chuck & Tool Co., Buffalo.

Richard G. Jones, late credit manager Continental and Commercial National Bank of Chicago, has been elected secretary and treasurer of Briggs & Turivas, dealers in salvaged material and scrap, Westminster Building, Chicago. Mr. Jones had 12 years of credit experience with the Chicago bank and with the Liberty National Bank, New York.

G. W. Way has resigned as sales manager of the Cromwell Steel Co., Cleveland, and has become connected with the National Sales & Trading Co., Cleveland.

Arthur Crooke and Thomas Thomson, plant managers of the Frodingham Iron & Steel Co., Ltd., Lincolnshire, England, are in the United States visiting iron and steel works.

The General Fireproofing Co., Youngstown, Ohio, has expanded its products until it now manufactures about 1000 all-steel articles. Early production of the company did not exceed eight to ten stock articles a day and it was difficult to dispose of them. Among its principal products are fireproof safes, filing cases, upright cabinets, transfer files, shelving, desks, insulated cabinets and the like.

OBITUARY

HARRY STEEL, chairman of the United Steel Companies, Ltd., and of Steel, Peech & Tozer, Ltd., died in London, England, in the early part of October, aged 57 years. He was a leading figure in the British steel trade, and well known to American steel manufacturers. One of his visits to the United States was in connection with the October, 1910, meeting of the American Iron and Steel Institute, held in New York, and attended by leaders in the steel industries of Great Britain, Germany, Belgium and Austria. The United Steel Companies, of which Mr. Steel was the head, was formed in 1918 by the merger of the Workington Iron & Steel Co., Steel, Peech & Tozer, Samuel Fox & Co., Frodingham Iron & Steel Co., Appleby Iron Co. and Rother Vale Collieries. Later the Distington Hematite Iron Co. and the Beckermet Mining Co. were added.

MRS. SARAH F. ATKINS, widow of the late E. C. Atkins, and largest individual stockholder of E. C. Atkins & Co., Indianapolis, died Sept. 30. Mrs. Atkins was a woman of remarkable intellect who retained to the last, though she was in her eighty-fourth year, her clearness of mind and many sided interests in the affairs of the world. She had a business sense that caused her counsel to be valued by her husband in the building up of the saw manufacturing company of which he was the founder, and she continued actively interested in the conduct of the business up to the time of her death, having been a member of the board of directors for a number of years.

FRANK A. MARVIN, vice-president and general manager Dodge-Haley Co., Boston, iron, steel and heavy hardware, died suddenly Oct. 9 of heart trouble, at Danbury, Conn., while motoring with his family to New York State over the holiday. Mr. Marvin was born at Cambridge, Mass., Aug. 26, 1860, and was educated in the public schools of that city. Completing his studies he went to work for the Dodge-Haley Co., and subsequently rose to membership in the firm. In business he was noted for his conservatism and squareness in dealings. His home was at 863 Massachusetts Avenue, Cambridge.

MICHAEL E. KEELEY, president and treasurer Waterbury Scrap Iron Co., Waterbury, Conn., died at his home in that city Oct. 8, aged 57 years, after a short illness. Mr. Keeley was also vice-president of the Lux Clock Co., Waterbury. He was a member of the Rotary Club.

FRANK KELTON, former secretary of the Kilbourne & Jacobs Co., Columbus, Ohio, died suddenly at his home in that city on Oct. 10.

SIR JOHN MCLAREN, Midland Engine Works, Hunslett, England, died recently, aged 70.

GEORGE TANGYE, director Tangyes, Ltd., Cornwall, England, is dead, aged 85.

The Huron Steel Co., Cleveland, announces that it has appointed the W. H. Gilbert Sales Co., with offices in Los Angeles, San Francisco, and Seattle as Pacific Coast agent to handle the sale of its product and those of its subsidiary, the Ohio Steel Products Co. These products will include boiler tubes, lap and butt weld pipe, acetylene welded tubing, rigid and flexible conduit and metal molding.

Purple ore, the residue resulting from the manufacture of sulphuric acid, is a heavy purplish powder, which has in the past been used chiefly as ballast for ships sailing from such ports as Bordeaux, where it was sold at 10s. a ton or less a few months ago, says the London *Ironmonger*. Now, however, British firms are paying 33s. per ton for the ore delivered at East Coast ports. The largest producer in the Bordeaux district is the Société St. Gobain, which owns the most important sulphuric acid works in the neighborhood.

OPTIMISM PREVAILS

American Manufacturers' Export Association Discusses Important Topics

Addresses at the eleventh annual convention of the American Manufacturers' Export Association at the Waldorf-Astoria Hotel, Oct. 14, were marked by a note of optimism, particularly for improved business conditions during the coming year. At the business session an amendment was adopted extending membership in the association to shipping, banking and insurance companies and other concerns interested in foreign trade. Officers for the ensuing year were elected. Former Secretary of Commerce William C. Redfield of Redfield & Wilson was elected president to succeed W. L. Saunders, Ingersoll-Rand Co. Other officers are: H. S. Demarest, Green, Tweed & Co., New York; F. H. Taylor, S. S. White Dental Mfg. Co., Philadelphia; C. K. Anderson, American Wire Fabrics Co., Chicago; J. S. Lawrence, Lawrence & Co., Boston; H. A. Koster, Koster & Co., San Francisco, and C. A. Green, American Pitch Pine Export Co., New Orleans, vice-presidents. William H. Ingersoll, president Robert H. Ingersoll & Brothers, was appointed treasurer and A. W. Willmann, secretary.

Mr. Kahn on Taxation

At the afternoon session an address that was greeted with great interest was made by Otto H. Kahn of Kuhn, Loeb & Co., New York, who spoke on "Taxation." Mr. Kahn decried the present system, particularly the excess profits tax, and suggested that in order to obtain a more equitable system of taxation Congress should consult with prominent, non-office holding citizens, who could meet and act in conjunction with the senators and representatives, not only on this question but on other questions of a highly specialized nature that arise from time to time. "I want to speak to you," said Mr. Kahn, "not as a rich man, but as a plain business man." He then pointed out the injustice of the present tax laws which permit the rich to invest their money in non-taxable securities and prevent the flow of capital into channels where it is urgently needed. In explaining his suggestion he said:

"The best ability and ripest experience of the country could be called upon and would surely be found ready to serve. Such committees might be composed of say five non-office holding members and six or seven senators and representatives. The reports emanating from the deliberations of the committee would, it may be hoped, come to be regarded as sources of reliable information to the public on social and economic subjects."

Regarding the selection of these citizens, Mr. Kahn suggested that "such commissions should be selected and appointed not by the executive but by Congress, acting through the President of the Senate and the Speaker of the House, or in some other suitable way.

Banks and Business

James S. Alexander, president National Bank of Commerce, told the convention that during the period through which we have recently passed, the loyal cooperation of the banks with business maintained the soundness of the business structure in a way never before witnessed in this country. He predicted that the peak of credit expansion must soon pass, but said that stable price levels must be established so that business can be conducted on the basis of confident judgment rather than on guess and speculation. In reference to foreign trade, Mr. Alexander pointed out the danger of seeking to stimulate by artificial measures the volume of trade and said that the banks could not finance it on such a basis as to perpetuate over-expansion in domestic banking credit.

The address of W. A. Harriman, American Shipping & Commerce Corporation, was attended with great interest in view of the storm of discussion that has been aroused over the company's recent 20-year contract with the Hamburg-American Lines. Mr. Harriman said there was absolutely nothing in the contract with the German company that could be construed as turning over American shipping to German control and restoring German shipping at our expense. In explaining the necessity of such a contract, Mr. Harriman discussed the difficulties that we face in building up a merchant marine, and said that under this arrangement the long years of experience and the foreign connections of the Hamburg-American Lines are at our disposal.

Financing Foreign Trade

W. L. Saunders, retiring president of the association, in opening the convention, spoke on the subject of financing foreign trade. "America is in a position to help foreign nations by credits, loans and investments," said Mr. Saunders. "This is what England has always done. During the last 40 years, England has invested 20 billions of dollars in foreign fields and in doing this she has prevented a premium on sterling. We can, by investing in Government loans and foreign industries, accomplish the same purpose and help strengthen our customers abroad so that they may pay for our exports."

Julius H. Barnes, former United States Wheat Director, explained the Great Lakes-St. Lawrence tidewater project and answered many of the current objections which claim that it would serve to "scrap" the barge canal and detract considerably from the importance of the port of New York. Dr. R. S. McElwee, the new director of the Bureau of Foreign and Domestic Commerce, discussed the part that the bureau is playing to aid American manufacturers who wish to sell their products in foreign markets. B. C. Forbes, editor of *Forbes Magazine*, spoke on "Our International Future."

In the evening the annual banquet was addressed by Dr. L. S. Lowe, director general, Pan-American Union; Alfred Reeves, manager National Automobile Chamber of Commerce; Alba B. Johnson, president Chamber of Commerce of Philadelphia and president of the Railway Business Association, and Dr. Charles A. Eaton, associate editor, *Leslie's Weekly*.

Pittsburgh Foundrymen's Association

PITTSBURGH, Oct. 19.—The monthly meeting of the Pittsburgh Foundrymen's Association, held last evening at Hotel Chatham, was given over to discussion of matters pertaining to the association and to short speeches by members of the association who had attended the annual convention of the American Foundrymen's Association at Columbus recently. The speakers included C. S. Koch, president of the Ft. Pitt Steel Casting Co. and retiring president of the American Foundrymen's Association, who presented some interesting statistics as to the cost of wiring the convention buildings, the space rented to exhibitors and the growth of the organization in the past year, which he said was approximateley 50 per cent, a very gratifying growth, in view of the fact that the organization is not a new one. He also commented on the contributions for the research endowment fund of the association. Other speakers were: Samuel Sleeth, superintendent of the foundry of the Westinghouse Air Brake Co., Wilmerding, Pa.; William B. Robinson of THE IRON AGE; C. H. Gale, of the Pressed Steel Car Co., and Thomas Malone, of J. S. McCormick Co. An interesting proposal was offered during the discussion of the affairs of the Pittsburgh organization, by E. D. Frohman, of S. Obermayer Co., that a prize be awarded from the income of the foundry fund for the best suggestion made during the year along the lines of improvement in foundry practice. Several new applications were presented.

The Federal Trade Commission has issued an order requiring the Oakes Co., Indianapolis, manufacturer of radiator fans, to refrain from placing detectives or other agents in plants of competitors for the purpose of obtaining any information of their business, particularly the names and addresses of persons to whom they ship goods, the amounts shipped, etc.

Machinery Markets and News of the Works

PRICES STAY UP

Buyers' Expectations of Reductions on Tools Have Not Yet Materialized

There Have Been Some Advances, in Fact, Notably One of 10 Per Cent by a Milling

Machine Maker

While hesitancy on the part of buyers of machine tools is attributed in measure to the expectation of lower prices, it is worthy of note that such reductions have not yet materialized, and, on the contrary, a few prices have been advanced. A Cincinnati milling machine manufacturer announced an advance of 10 per cent, effective Oct. 12, and in recent weeks there have been other advances on miscellaneous lines of machinery, such as air compressors, bulldozers and friction saws.

Considering the scarcity of orders, the volume of inquiries is surprisingly good, but sellers find it very difficult to persuade prospective purchasers to close. Not even the guarantee of price against decline is effective in all instances. Nevertheless, sellers of machine tools derive some comfort from the belief that the inquiries indicate an actual need of tools, which will be satisfied when conditions have become more settled.

In the Chicago district buying by the railroads seems to have struck a lull, though lists of the Chicago & Northwestern and Illinois Central are still being acted upon. Elsewhere in the country there is no indication of any railroad buying of importance.

Cincinnati machine-tool plants are working fairly full on old orders, but new orders are scarce. One plant reports that its cancellations last month exceeded new orders. In New England there is some curtailment among machine-tool plants, several operating on four or five-day week schedules, and one plant at Bridgeport is entirely shut down for a short period. New tools are going out of plants faster than new orders are coming in.

New York

NEW YORK, Oct. 19.

Notwithstanding a reduction of 15 per cent in one line of internal grinders, as announced last week, there is no indication that machine-tool prices generally will be reduced. Some machine-tool manufacturers are greatly in need of orders, but doubt that price reductions will bring in any substantial amount of business under present conditions. In fact, there have been some advances recently, notably on some makes of air compressors, bulldozers and friction saws. In one instance, the advance amounted to 30 per cent. In view of the contradictory elements in the present situation, it is not surprising that neither buyers nor sellers know just what action to take, and the result is a general marking of time all along the line.

While export business is about as dull as domestic business, a few orders have been coming in, principally from Japan. The Japanese navy may buy one or two large machines in this country. One machine tool company's sales to Japan last month were greater than its sales in this country.

A fair number of inquiries is being received, but buyers are slow in taking action. It is probable that some of the inquiries are for estimating purposes. The Reading Steel Casting Co., Reading Pa., has been considering the purchase of a list of tools, and the General Electric Co. has issued inquiries for a few tools for its Schenectady works.

Some improvement is noted in the crane market, a few orders that have been in prospect for some time having been placed. Inquiry for hand power and locomotive cranes for export is fairly active, but foreign buyers are slow to place orders. Manufacturers with selling agents in foreign markets report that these representatives are showing no inclination to keep their stocks complete. Among recent inquiries for export is one from the International Trading Corporation, 38 Park Row, New York, for a 5-ton, 20-ft. boom locomotive crane for 3-ft. 6-in. gage track. The Navy Department has issued a call for bids on two overhead traveling cranes for the New York Navy Yard; one of 15-ton capacity, 151-ft. 9½-in. span, 4-motor, and one of 10-ton capacity, 85-ft. span, 5-motor with two 5-ton trolleys. The Pan American Terminal & Dock Co., lessees of three of the new docks at Stapleton, Staten Island, has turned over the specifications on 34 gantry cranes to the city of New York, through which the inquiry will be issued.

Among recent sales are: Browing Co., a 20-ton locomotive crane to Michlovitz & Co., Harrisburg, Pa., and a 20-ton locomotive crane to English & Wilson, 50 Church Street, New York; Champion Engineering Co., a 10-ton, 95-ft. span overhead traveling crane to the Lima Locomotive Works, Lima, Ohio, and the Shepard Electric Crane & Hoist Co., one 10-ton, 31-ft. span and two 5-ton, 21-ft. and 31-ft. span overhead traveling cranes to the Bessemer Gas Engine Co., Grove City, Pa., and a 2-ton, single I beam crane to the Reid Gas Engine Co., Oil City, Pa.

J. Ruppert, Inc., 1639 Third Avenue, New York, has completed plans for a two-story machine works and automobile repair shop, 50x200 ft., at 243 East Ninetieth Street, to cost about $50,000.

The Federal Electric Safety Appliance Co., New York, has been incorporated with a capital of $100,000 by W. and M. Lyons, and K. Scherer, 317 East Fourteenth Street, to manufacture electrical and mechanical safety equipment.

The Rensselaer Valve Co., Van Schaick Island, Troy, N. Y., has increased its capital from $500,000 to $1,200,000.

The O. J. Childs Co., 1265 Broadway, New York, manufacturer of fire equipment, has been merged with the Utica Fire Apparatus Co., Utica, N. Y., manufacturer of similar equipment.

The Brooklyn Alloys Co., Brooklyn, has been incorporated with a capital of $150,000 by R., C., and P. Hershoopf, 1581 President Street, to manufacture metal products.

The S. & S. Corrugated Paper Machinery Co., 174 North Fourth Street, Brooklyn, manufacturer of paper machinery and parts, has increased its capital from $15,000 to $60,000.

The Intrevenous Products Co. of America, New York, has been incorporated with a capital of $25,000 by A. A. Everall, D. E. Ushkow and B. Schonceit, 200 Fifth Avenue, to manufacture surgical instruments.

Rechnitz Brothers, 143 Liberty Street, New York, have completed plans for a one-story automobile service and repair building at 302 East Forty-fifth Street, to cost about $150,000.

The Borough Park Garage, 1434 Forty-ninth Street, Brooklyn, has plans under way for a four-story automobile repair and parts plant, 90x100 ft., at Fourteenth Avenue and Thirty-eighth Street.

The Butwell Bumper Co., Freeport, L. I., has been incorporated with an active capital of $100,000 by J. M.

Lydecker, H. E. Cover and B. M. Asch, Freeport, to manufacture metal bumpers for automobile service.

The Master Rule Mfg. Co., 841 East 135th Street, New York, has acquired seven lots on East 136th Street, near Willow Avenue, for extensions.

The Anthony Rubber Co., 680 Lenox Avenue, New York, manufacturer of automobile tires, has acquired 75x100 ft. at Lenox Avenue and 144th Street for a new plant.

Charles A. Smith & Sons, Inc., New York, has been incorporated with a capital of $40,000 by M. Rogers, J. L. Koeppler and W. H. Gillon, 1246 Pacific Street, Brooklyn, to manufacture metal rulers and similar specialties.

The Noiseless Typewriter Co., 253 Broadway, New York, with plant at Middletown, Conn., has filed articles of incorporation under Delaware laws with capital of $5,000,000.

The Raritan Foundry Co., Raritan, N. J., has increased its capital from $50,000 to $200,000.

The Magneto Parts Mfg. Corporation, Butler, N. J., has acquired property in the southern part of the borough for a three-story, reinforced-concrete works, 50x200 ft., with adjoining machine shop, 50x80 ft., estimated to cost about $200,000 with equipment. It also plans a housing development in this section. Isaac Q. Gurnee, Myrtle Avenue, Bloomingdale, is interested in the project.

The Peerless Insulated Wire & Cable Co., Pennington, N. J., manufacturer of electric wires and cables, has arranged for the immediate erection of the addition to its plant for the manufacture of weatherproof wire products. It is estimated to cost about $50,000.

The John R. Forbes Foundry & Iron Works, Jersey City, N. J., has filed notice of organization to operate at 17 Merseles Street, for the manufacture of iron castings, machine parts, etc. John R. Forbes, 505 Valley Place, South Orange, N. J., heads the company.

De Mattia Brothers, Inc., Garfield, N. J., manufacturer of rubber mill machinery and other equipment, is having plans prepared by J. F. Kelley, Post Office Building, Passaic, N. J., for an addition to its plant, 90x200 ft., to cost about $150,000, including equipment.

The Live Wire Electrical Appliances Co., 181 Griffith Street, Jersey City, N. J., has filed notice of organization to manufacture electrical devices. Edward Mahlen heads the company.

The New Jersey Gauge Co., 712 Monroe Street, West New York, N. J., has been organized to manufacture pressure gages and other precision equipment. George L. Spence, 3 Crescent Avenue, Grantwood, N. J., heads the company.

The Monroe Calculating Machine Co., 49 Mitchell Street, Orange, N. J., has awarded all miscellaneous contracts for its four-story addition, estimated to cost about $200,000, including machinery.

J. M. Quinby & Co., Inc., 23-39 Division Street, Newark, N. J., manufacturer of automobile bodies, has called a special meeting of stockholders on Oct. 26 for approval to sell the property of the company in Newark, including buildings and appurtenances. Herbert W. Suffern is secretary.

The American Machinery Exchange, Inc., Newark, recently incorporated with a capital of $125,000 to manufacture machinery, has changed its name to the C. A. Loomis & Sons Co. Charles A. Loomis heads the company.

A. O. O'Keefe & Sons, 149 Mulberry Street, Newark, have filed notice of organization to manufacture tools, machine parts, etc. Andrew O'Keefe, Chatham, N. J., heads the company.

The Heller Brothers Co., 879 Mt. Prospect Avenue, Newark, N. J., manufacturer of files, has filed plans for a one-story addition on Verona Avenue, 33 x 54 ft.

The United Sheet Metal Works, Inc., Newark, has been incorporated with a capital of $100,000 by Edward and Charles Weislow, 361 South Seventeenth Street, and Harry Roth, 25 Ellis Avenue, Irvington, to manufacture sheet metal products.

The Newark Patents Engineering Co., Newark, manufacturer of special machinery, etc., has increased its capital from $50,000 to $250,000.

The Edwards Engineering & Mfg. Co., 67 Gobel Street, Newark, has called a special meeting of stockholders on Nov. 16 to vote on a resolution for a dissolution of the company. Charles K. Stringer is secretary.

To provide for operation at its new plant at Newark, the S. Obermayer Co., 2563 West Eighteenth Street, Chicago, has filed notice of corporate organization in the State, with Edward M. Spear, 18 Wall Street, Trenton, N. J., as representative. It recently acquired property at Blanchard and Ferry streets, Newark, for the establishment of branch works for the manufacture of foundry supplies and equipment.

The Essex Engine & Machine Corporation, 71 Rutgers Street, Newark, formed through a merger of the former Hewes & Phillips Iron Works, Orange Street, Newark, and the Essex Machine Co., Belleville, has plans under way for enlargements to double approximately the present capacity. Plans have been filed for an addition, 50x70 ft., and this will be followed at an early date by other buildings. Dudley Drake, vice-president and general manager, was connected with the Hewes & Phillips Co. for about 35 years, and many employees of this company are now with the new concern. John Hozack is president, and James Hozack, secretary and treasurer.

Peter Baines, Newark, has filed plans for a new one-story machine shop and welding works at 10 Lillie Street.

In connection with its new plant at Governeur Street and Mt. Pleasant Avenue, the Universal Tobacco Machine Co., 98 Murray Street, Newark, is planning for the removal of its present works. The new plant is two and three stories, 100x200 ft., and will cost about $200,000, including machinery. It is expected to treble the present capacity, and will give employment to about 500 operatives.

Buffalo

BUFFALO, Oct. 18.

The Clipper Tool Co., 284 Mills Street, Buffalo, has leased a new one-story industrial building, 30x140 ft., to be erected by Gustav J. Funk, on A Street, at a cost of about $25,000. It will be equipped for the manufacture of tools and other metal products. Frank Parr is president.

The Stanley Steel Welded Wheel Corporation, 40 Court Street, Boston, has received bids for its new plant at Tonawanda, N. Y., on a site recently acquired. It will be one-story, 100x200 ft., and is estimated to cost about $100,000.

The Corporation Pattern Works, Rochester, N. Y., has increased its capital to $25,000.

F. N. Trevor, 1382 Niagara Street, Buffalo, has plans under way for a new two-story plant, 35x75 ft., for the manufacture of metal products.

The Syracuse Fire Door Co., 701 Westcott Street, Syracuse, N. Y., has awarded a contract to William J. Henley, Syracuse, for a one-story works, 51x115 ft., at McIntyre and Canal streets.

The American Car & Foundry Co., 370 Babcock Street, Buffalo, has completed plans for a one-story power house, 45x100 ft., to cost $50,000.

New England

BOSTON, Oct. 18.

Local machine tool business the past week has been confined largely to purchases by the General Electric Co., West Lynn, Mass., against previous lists, and it probably will continue to be an important factor in this market during the next two months, at least. A Pawtucket, R. I., textile machinery maker has purchased two additional Porter-Cable lathes, the Worthington Pump & Machinery Corporation a 7½-ton crane for its Blake & Knowles Works, and the Pacific Mills, Boston and Lawrence, Mass., cotton, some wood-working equipment; the machine-tool market otherwise has been at a standstill. A special stockholders' meeting of the Boston & Maine Railroad has been called for Oct. 26, to take action on methods for raising funds with which to purchase equipment. Local interests see possibilities of the company buying at least a part of the shop equipment which has been under consideration for months. Within the last few days there has been a decided slump in the demand for drills, milling cutters and small tools, and as a result manufacturers who contemplated purchases of machine tools, in some cases, have indefinitely postponed such action. In one instance a sale of several lathes and milling machines was lost and in another six lathes.

Machine-tool makers are receiving instructions from foreign representatives and consumers to hold up export orders, due, it is believed, to the coal situation in England. They also state that in the past week or 10 days domestic buyers have been sounding the market to detect weak spots, and Canadian interests have offered to place orders here for metal-working equipment provided manufacturers take care of the foreign exchange question. As far as can be learned, however, with one exception, manufacturers are holding strongly to previously quoted prices, taking the stand that the market cannot weaken until raw materials and labor are lower. A Bridgeport, Conn., machine-tool plant is closed temporarily and several others in New England are operating on four and five-day week schedules. New machines are going out of plants faster than new orders are coming in. However, the machine-tool industry, as a whole, is in a strong position, financially and otherwise.

The Fitchburg Gas & Electric Co., Fitchburg, Mass., has awarded contract for the erection of a $100,000, three-story

addition to be used as a boiler house, machine shop and service station.

Approximately $5,000 damage was recently incurred by fire at the plant of the Ware Foundry Co., Ware, Mass. Repairs will be made as soon as the insurance is adjusted. Frank S. Mills is manager.

The Auto-Mailing Machinery Co., Fitchburg, Mass., with a capital of $200,000, has incorporated under Massachusetts laws to take over the plant of the Nielsen Mailing Machine Co., 7 Willow Street, Fitchburg. Enlargements are contemplated, but details are not ready to be made public. Alton F. Tupper, 15 State Street, Boston, is president and treasurer.

The Air-Jack Corporation of America, Providence, capitalized for $300,000, has secured a Rhode Island charter to manufacture automobile jacks and other automobile accessories. The incorporators are Thomas Gavin, Louis Ober and Gladys Goldsmith.

The Harbor Machine Co., Boston, has been incorporated under Massachusetts laws to acquire the business of that name at 183-185 High Street. The assets of the absorbed company are $20,000. Henry A. Ellis, 68 Hamilton Avenue, Lynn, Mass., is president; Charles Baumgart, 292 Highland Avenue, Somerville, vice-president; and Karl W. Ostrom, 83 St. Botolph Street, Boston, treasurer.

The Springfield Automatic Machine Corporation, Fitchburg, Mass., manufacturer of radial screw machinery, will defer the erection of its new plant at West Springfield, Mass., until after the first of the year. It will be constructed on the unit system and plans for the initial building have been completed.

The R. Wallace & Sons Mfg. Co., Wallingford, Conn., manufacturer of plated ware, has increased its capital from $1,600,000 to $2,400,000.

The Fall River Bobbin & Shuttle Co., Fall River, Mass., manufacturer of textile machinery, has awarded a contract to the General Engineering & Construction Co., New Bedford Savings Bank Building, New Bedford, Mass., for the erection of a four-story brick and steel addition, 41 x 100 ft., to cost about $50,000.

The Eagle Lock Co., Terryville, Conn., has plans under way for enlargements in its power plant, to include the installation of new equipment.

The Boston & Maine Railroad Co., Boston, has awarded contract to the H. Wales Lines Co., Meriden, Conn., for the erection of additions to its shops and engine house at Deerfield, Mass., to cost about $150,000.

The Collins Co., Collinsville, Conn., manufacturer of agricultural machinery, operating with a capital of $1,000,000, is arranging for a new stock issue and is said to be contemplating enlargements in its plant.

The Empire Knife Co., Winsted Conn., manufacturer of pocket cutlery, etc., has increased its capital from $80,000 to $175,000.

The Liberty Engine Co., Seymour, Conn., has filed final notice of dissolution under State laws.

The W. N. Craw Mfg. Co., Inc., Norwalk, Conn., has been incorporated with a capital of $50,000 by H. C. Craw, W. F. Tammany and P. R. Connery, 83 Flax Hill Road, all of South Norwalk, to manufacture machinery and tools.

The M. A. Palmer Co., Boston, has been incorporated with a capital of $50,000 by Melvin A. Palmer, Wicklow Avenue, Medford, Mass.; Charles W. Holbrook and H. F. Aarion, to manufacture iron and steel products, etc.

The Raybestos Co., Bridgeport, Conn., manufacturer of automobile brake lining, etc., has increased its capital from $2,000,000 to $3,000,000.

The Boston Engineering Co., 308 Atlantic Avenue, Boston, manufacturer of boilers and operating a general machine works, has been reorganized, and will operate in the future as a State corporation. Increased facilities and production are planned.

Philadelphia

PHILADELPHIA, Oct. 18.

The Stalium Metals Corporation, 226 Lafayette Building, Philadelphia, recently incorporated with a capital of $2,500,000, is taking bids for the first unit of its new plant on a 10-acre site recently acquired at Chester, Pa. The structure will cost about $60,000, and will be supplemented by other buildings at an early date. S. S. Staley is president. R. Beard, 2349 North Woodstock Street, Philadelphia, is engineer.

S. Margolis, 815 Washington Street, Philadelphia, has acquired the three-story foundry at the corner of Eighth Street and Washington Avenue, 90x128 ft. The property has heretofore been held by E. J. Fetherstone.

The C. B. Porter Co., 128 North Second Street, Philadelphia, manufacturer of tinware products, has completed plans for extensions and improvements in its plant to cost about $65,000.

The Vulcan Foundry Co., Philadelphia, is being organized to manufacture iron and steel products. Application will be made for a State charter on Nov. 8. Frank A. Moorshead, Commonwealth Building, is in charge of the organization.

The Keystone Auto Top Co., 1412 Fairmount Avenue, Philadelphia, will take bids late in November for its new four-story plant, 85x140 ft., at 1712-20 Fairmount Avenue, and estimated to cost about $175,000. LeRoy B. Rothschild, 1225 Sansom Street, is architect.

Fayette R. Plumb, Inc., Backius and James streets, Philadelphia, manufacturer of tools, hardware products, etc., has called a special meeting of stockholders on Nov. 16 to approve its proposed increase in capital from $950,000 to $4,000,000. John M. Williams is secretary.

The Eastern Foundry & Machine Co., Liberty Building, Philadelphia, has awarded contract to Charles Davis & Son, Fifteenth and Ellsworth streets, for its new one-story plant, 60x120 ft., at Fernwood, to cost about $25,000.

A. Hartman, Philadelphia, has filed plans for a new six-story, reinforced-concrete automobile service and repair works at 1603-7 Vine Street, to cost about $100,000.

The Standard Crown Co., Hope and Palmer streets, Philadelphia, manufacturer of metal bottle caps, etc., will hold in abeyance the erection of its new two-story plant, 61x120 ft., at Mascher and Clearfield streets, estimated to cost about $100,000.

The Autocar Co., Ardmore, Pa., manufacturer of automobile trucks, is having plans prepared for two new three-story buildings, 85x325 ft. and 60x140 ft. respectively. Horace W. Castor, Girard Building, Philadelphia, is architect.

The Luzerne Rubber Co., Muirheid Avenue, Trenton, N. J., manufacturer of hard rubber products, has filed plans for its new plant on Brunswick Avenue, to cost about $25,000.

J. Osborne Hunt, architect, 114 North Montgomery Street, Trenton, N. J., has been commissioned by the Gutta Percha Co. of Holland to prepare plans for a new plant at Singapore. The proposed factory will be two stories, 80x400 ft., estimated to cost about $300,000, with machinery, which will be purchased in this country. Preliminary negotiations are under way with the John E. Thropp's Sons Co., Lewis Street, Trenton, manufacturer of rubber mill machinery, for considerable equipment for this purpose. Mr. Hunt was selected for the engineering owing to his experience in designing automobile tire plants, for which purpose the new factory will be used.

The Phoenix Iron Works, Meadville, Pa., manufacturer of boilers, tanks, etc., has awarded a contract to the H. K. Ferguson Co., 6525 Euclid Avenue, Cleveland, for a number of additions to its plant.

The Templeton Mfg. Co., Lancaster, Pa., has been organized by F. S. Templeton and associates to manufacture machinery and parts.

The Frick Co., West Main Street, Waynesboro, Pa., manufacturer of agricultural machinery and parts, has negotiations under way for the purchase of the local plant of the Emerson-Brantingham Co., East Second Street, manufacturer of a similar line of equipment. A meeting of stockholders of the Frick Co. will be held on Dec. 14 to vote on an increase in the capital stock from $2,000,000 to $5,000,000.

The Laurelton Foundry Co., Laurelton, Pa., has been incorporated with a capital of $30,000 to manufacture iron, steel and other metal castings. R. H. Shirk, Laurelton, is treasurer.

The Lycoming Foundry & Machine Co., Oliver Street, Williamsport, Pa., has completed plans for a one-story power house, 50x100 ft., to cost about $30,000.

The Coplay Cement Co., Coplay, Pa., is planning for the erection of a foundry to be used primarily for machinery repair work and parts production.

The Cornwall Railroad Co., Lebanon, Pa., has completed plans for a new one-story machine and repair shop, 150x200 ft., including power house, to cost about $130,000.

The McCormick Motor Car Co., Williamsport, Pa., has awarded a contract to the Turner Construction Co., 1713 Sansom Street, Philadelphia, for a four-story service and repair building at Third and Hepburn streets, 100x196 ft., to cost about $250,000.

The Lancaster-Susquehanna Power Co., Lancaster, Pa., has been formed by officials of the Edison Electric Co. and the Conestoga Traction Co., Lancaster, to build a hydro-electric power plant on the Susquehanna River mentioned in these columns last week. Application has been made for a State charter. Those interested are W. H. Griest, president Conestoga Traction Co. and Edison Electric Co.; R. B. Hull and S. R. Zimmerman, Lancaster. George Bullock and E. G. Connette of the Pennsylvania Power Co., Allentown, are also connected with the new company.

The Smith-Waring Corporation, Third and Locust street, Harrisburg, Pa., is planning for the operation of a plant for the manufacture of a tractor-cultivator, suitable for small farm service. Henry Waring is president.

Clinton E. Woods, receiver for the Bethlehem Motors Corporation, Allentown, Pa., manufacturer of motor trucks, has been granted permission to issue receiver's certificates to the amount of $200,000 to operate the plant, which was closed several weeks ago.

Pittsburgh

PITTSBURGH, Oct. 18.

The local machinery trade reflects the same hesitancy on the part of buyers that exists in practically all markets. Purchases are restricted to necessary equipment, and while inquiries are fairly numerous, they are mostly feelers to secure prices for estimating. The belief is common that prices of machinery and cranes cannot advance in the face of a downward tendency in almost all other directions, and buyers feel they have nothing to lose and possibly something to gain by deferring purchases. Thus far no reduction in prices has been made. In the crane market, the only recent awards were a 5-ton crane with 40 ft. span to the Pawling & Harnischfeger Co., Milwaukee, by the Kelley & Jones Co., Pittsburgh, for its plant at Greensburg, Pa., and a 20-ton with 5-ton auxiliary, to the Champion Engineering Co., Kenton, Ohio, by the Corrugated Bar Co., Buffalo. The Pollock Steel Co., Cincinnati, is in the market for a 10-ton crane with 35 ft. span, and the Massillon Rolling Mills, Massillon, Ohio, is asking bids on a 5-ton crane with 38 ft. span. Demand for machine tools is for individual pieces, with no lists out. Railroads are showing little interest in the market and the opinion is now that the roads are back in private hands and business men are directing them, buying will be along more conservative lines than when the Government was in charge.

The Standard Steel Car Co., Butler, Pa., is planning for a two-story addition, 45x85 ft., for heat-treatment, foundry and experimental work. A new machine shop will also be built.

The Standard Pipe & Supply Co., Pittsburgh, has filed notice of dissolution under State laws.

The Pittsburgh Street Railways Co., Chamber of Commerce Building, Pittsburgh, has completed plans for an addition to its electric power plant on Brunots Island.

The Pittsburgh Machinery Co., 530 Fourth Avenue, Pittsburgh, operated as a partnership by C. C. Mitchell and J. A. Bradley, has been dissolved. The machinery and parts business heretofore operated will be conducted in the future by Mr. Mitchell individually.

The Diamond Tank Car Corporation, Pittsburgh, has been incorporated with a capital of $30,000 to manufacture cars, trucks, etc. Carl Cappell, Jr., 303 Bensman Street, is treasurer.

The Richland-Marshall Coal Co., Moundsville, W. Va., is planning for the installation of electrically operated machinery at its properties.

The Nickel Fabricating Co., Bellefonte, Pa., has been incorporated with a capital of $50,000 to manufacture nickel and other metal products. Charles T. Hennig, Bellefonte, is treasurer.

The Tomkins By-Product Coal Co., Robson Prichard Building, Huntington, W. Va., recently incorporated with a capital of $100,000, is planning for the erection of a coal tipple at Chapmanville, W. Va. W. E. Tomkins is president and manager.

The National Shale Brick Co., Martinsburg, W. Va., recently organized, has had plans prepared for its new works to cost about $250,000 including machinery. Several one-story buildings will be erected. F. Vernon Aler is president.

The Chesapeake & Ohio Railway, Richmond, Va., has preliminary plans under way for new shops at Huntington, W. Va., to be used primarily for freight car service. With office building and other structure, the project is estimated to cost about $500,000.

The Empire Welding & Automobile Repair Co., Wheeling, W. Va., has been organized by W. M. Cole and F. T. Wiles to operate a local machine and repair works.

The Scranton Enameling Co., Pittsburgh, has been incorporated with a capital of $25,000 to manufacture enameled ware. B. E. Watson, 709 Madison Avenue, is treasurer.

The Wheeling Stove & Range Co., Wheeling, W. Va., has been taken over by the Wheeling Steel Corporation and will be operated by the Whitaker-Glessner Co. One of the buildings will be converted into a stove factory.

The National Forge & Tool Co., Irvine, Pa., will enlarge its plant by the erection of an addition 70 x 100 ft.

Indiana

INDIANAPOLIS, Oct. 18.

The Indestructible Wheel Co., Lebanon, Ind., manufacturer of automobile wheels, is taking bids for a new one-story plant, 80 x 120 ft., to cost about $50,000. A power house will also be erected.

The Lavelle Foundry Co., Anderson, Ind., manufacturer of brass, bronze and other metal castings, is considering plans for new works to cost about $200,000, including machinery.

The Frederickson Mfg. Co., Lincoln Avenue, Gary, Ind., manufacturer of carburetors and ignition equipment, will take bids before the end of the year for a new one-story plant to cost about $50,000. John C. Frederickson is president.

The Board of School Commissioners, Indianapolis, has completed plans for a two-story addition to the school on East Michigan Street, to be equipped as a manual training department, 250 x 400 ft. The school is estimated to cost $225,000. Snider & Rotz, Merchants' Bank Building, are engineers.

The Lynch Glass Machine Co., Anderson, Ind., has awarded contract to the H. K. Ferguson Co., Cleveland, for a new one-story plant, 85 x 125 ft., to cost about $60,000.

The Service Motor Truck Co., Wabash, Ind., has completed plans for new works on Chelsea Green, London, Ont., to comprise three one-story structures, 100 x 300 ft., estimated to cost about $250,000, including equipment.

The Fennessy Automobile Lock Co., Anderson, Ind., has been incorporated with $10,000 capital stock to manufacture automobile parts. The directors are James H. Fennessy, Maurice Collins and Philip B. O'Neill.

Charles H. Dehmer, cashier First National Bank, Columbus, Ind., and Walter Nugent have formed a partnership and are building a plant for the manufacture of hardware specialties.

The Star Automotive Specialty Co., Anderson, Ind., has been incorporated with $100,000 capital stock to manufacture automotive accessories. The directors are William Wikle, Harry Stahl, William Estep, Guy Marts and Hans Runyan.

The Ryan-Kellogg Conveyor Corporation, Elkhart, Ind., has been incorporated with $200,000 capital stock to manufacture conveying machinery and equipment. The directors are Herl J. Ryan, Elton T. Kellogg and David M. Hoover.

The Haywood Tire & Equipment Co., Indianapolis, manufacturer of machines for rebuilding tires, has increased its capital from $20,000 to $400,000.

E. E. Allen has been appointed receiver for the Rapid Rim Co., manufacturers, Huntington, Ind., with the purpose of affording an opportunity to reorganize and obtain additional finances. The company has a large plant for the manufacture of patented rims, piston heads, rings and other automobile accessories.

William R. Hirst has been appointed receiver for the Van Briggle Motor Device Co., Indianapolis, in a friendly suit. L. Howard Van Briggle, president, says the plant will be kept going manufacturing shock absorbers.

Charles O. Roemler, Indianapolis, and Robert M. Fuestel, Fort Wayne, have been appointed joint receivers for the Spacke Machine & Tool Co., Indianapolis, on application of the Vonnegut Machinery Co., the purpose being to keep the plant in operation. The company is not insolvent, the petition states, but needs additional capital.

Milwaukee

MILWAUKEE, Oct. 18.

Machine-tool manufacturers find it difficult to arouse interest among buyers and it is apparent that shops are exercising extreme caution in purchasing equipment. Inquiries, however, indicate that a considerable amount of business is being held in abeyance, pending developments in the price situation, but quotations show that these are firmly held.

The U. S. Tractor & Machinery Co., Menasha, Wis., has broken ground for a new machine shop, 60x200 ft., and a 75-ft. extension of the main shop. A miscellaneous lot of tools and fixtures is being purchased and it is hoped to take occupancy of the new machine shop by Nov. 20. The general contractor is C. R. Meyer & Sons Co., Oshkosh, Wis. In addition to the Uncle Sam 20-30 tractor now built exclusively, the company will place in production about Dec. 1 a smaller type of farm and general haulage machine. The output of Harris governor pulleys also will be materially increased.

The Crucible Steel Casting Co., 612 Clinton Street, Milwaukee, sustained an estimated loss of $25,000 to $30,000 by fire supposed to have originated from lightning on Oct. 15. The cleaning room was totally destroyed and the casting shop considerably damaged. Rebuilding will begin immediately. Fred A. Lange is president and treasurer.

The Plymouth Foundry & Machine Co., Plymouth, Wis.,

Sanymetal factory office partitions, made by the R. F. Carpenter Mfg. Co., Cleveland, on the unit principle for assembly at the point of use, comprise a combination of hollow metal posts, intermediate metal panels and a section above these fitted to admit glass. A variable width end panel without glass provides for covering a distance up to 2 ft., thus to take care of various room dimensions. The material used is the Armco iron enameled on both faces of the partitions. Angles and corners are beveled to prevent the collection of dust. Special floor and ceiling inserts hold the partitions in place.

is laying foundations for a new cupola building and molding floor, 62x154 ft., to be ready early next spring. The present building will be remodeled and used entirely for machine shop purposes, which will require some additional equipment. Besides conducting a jobbing foundry and machine shop, it manufactures feed cutters and other farm operating machinery.

The Lienau Brass & Aluminum Foundry Co., Sheboygan, Wis., has been incorporated with a capital stock of $25,000 by Walter and Otto Lienau, who established a casting shop a year ago and are now planning expansion.

Theodore Salzsieder, Maribel, Wis., who opened a machine shop and automotive service station last spring, is erecting a one-story brick shop building, 60x90 ft., to accommodate the business.

The Wisconsin Basket & Pail Co., Two Rivers, Wis., has decided to rebuild immediately its factory and power plant, destroyed by fire on Oct. 7, with a loss of $135,000. Plans call for a three-story building, 50x120 ft., of reinforced concrete, brick and steel sash. New power plant equipment, veneer cutting and wood-working machinery will be purchased. John F. Conant is president and treasurer.

The Maribel Straw Cutter Mfg. Co., Maribel, Manitowoc County, Wis., has been incorporated with a capital stock of $50,000 to build a plant for the manufacture of patented implements and devices for the farm. The officers are: President and chief engineer, Henry A. Elmer; vice-president, Dr. V. V. Kellner; secretary-treasurer, P. J. Carberry.

The Jefferson Rubber Co., Jefferson, Wis., which has been incorporated with a capital stock of $300,000, has perfected its organization and elected the following officers: President, R. W. Lyons, Chicago; vice-president, C. R. Girton, Chicago; treasurer, Will S. Henry, Jefferson; secretary, William E. Taube, Chicago. Plans are being drawn for the first unit of the new factory and construction will start about Nov. 10.

The Oshkosh Motor Truck Co., Oshkosh, Wis., has transferred its plant to its new machine and assembling shop, 100x450 ft., of sawtooth construction, and is installing additional equipment. The capacity of the first unit is five trucks a day, employing 225 to 250 operatives. The company builds its own axles, transmissions, radiators, sheet metal work, and other parts. In addition to commercial orders, which will occupy capacity for at least six months, it has taken an order to furnish the city of Oshkosh three 500-gal. triple combination motor pumping fire engines and hose cars at a price of $30,602.98. William A. Besserdich is chief engineer.

The Surf Mfg. Co., 109-113 Clinton Street, Milwaukee, manufacturer of power washing machines, wringers, etc., has increased its authorized capitalization from $100,000 to $200,000 to finance enlargement of its production, which will require some additional equipment. Extra floor space has been leased. Oscar F. Fischedick is president and general manager.

The Juul-Peterson Machine Co., Oshkosh, Wis., has been organized by John Juul and Albert Peterson to manufacture and repair machinery and specialize in brass table lamps and novelties. The building at 83 High Street has been leased and is being equipped. It will be operated by individual electric motors with purchased current.

The Leyse Aluminum Co., Kewaunee, Wis., will increase its authorized capitalization from $200,000 to $700,000. It has enlarged its facilities the past year and is installing additional equipment from time to time. Aluminum signs, utensils, stampings, novelties and other stamped and drawn ware are manufactured.

The Singer Talking Machine Co., Milwaukee, which established a factory at 579-581 Market Street about three years ago, has been incorporated with a capital stock of $150,000 by Harry Lewin, Burr F. Sprague and Alvin Tighe, attorney, 425 East Water Street. Additional floor space has been leased.

The Yates-Johnson Co., Chippewa Falls, Wis., is erecting a one-story brick and concrete machine-shop addition, 48x60 ft., and will convert part of the present machine shop into a foundry addition. Machine tools and other equipment costing about $40,000 are being purchased.

Chicago

CHICAGO, Oct. 18.

Except for the purchase of a few additional machines by the Santa Fe, there has been no further action on pending railroad inquiries. Although both the Chicago & Northwestern and the Illinois Central have been expected to close on their lists for several weeks, the trade has been disappointed. Industrial consumers show interest in new equipment to the extent of issuing inquiries, but few are buying. Some are restrained by financial difficulties and others frankly admit that they are waiting for lower quotations. Further requests for guarantees against price declines have been received by local dealers, but no word has come from manufacturers indicating that they will take this step to encourage the closing of new business. Collections are still difficult.

The General American Tank Car Corporation, Chicago, is in the market for a 500-ton four-column hydraulic press and a 2000 to 3000-cu. ft. motor-driven air compressor to maintain a pressure of 100 to 125 lb. The Chicago Board of Education is asking for small miscellaneous equipment for the Lane Technical High School and the Englewood High School. Among the tools wanted for the former are one foot-power 30-in. squaring shears, one motor-driven precision bench drill and one double-end motor-driven grinder buffer, while the list for the Englewood school includes one No. 1 motor-driven milling machine, one motor-driven No. 3 punch press, motor-driven 9-in. x 4-ft. engine lathe, No. 2 arbor press, 36-in. foot power squaring shears, 1¼-hp. motor-driven polisher, hand blower forge, combination motor-driven wet and dry grinder, tool post grinder with internal and external grinding wheels, motor-driven hack saw and an electric drill.

The Alemite Die Casting & Mfg. Co., 341 West Chicago Avenue, Chicago, has let contract for a one-story factory, 150x272 ft., at 2640-2654 Belmont Avenue, to cost $150,000. Equipment will call for an expenditure of $200,000 more.

The Superior Washing Machine Co., De Kalb, Ill., is having plans prepared by Weightman & Steigeley, 21 North La Salle Street, Chicago, for a one-story factory to cost $600,000.

The John C. Frederickson Mfg. Co., Gary, Ind., manufacturer of carburetors, has retained Weightman & Steigeley, 21 North La Salle Street, Chicago, to prepare plans for a one-story plant. Details are yet to be decided upon.

The Chicago Separator Corporation, 1934 Carroll Avenue, Chicago, has been incorporated by Benjamin P. Ruekberg, Maurice Burr and David Jetzinger, with $10,000 capital stock, to manufacture automobiles, accessories, etc.

The Burn Clean Non-Carbonizing Spark Plug Corporation, 4201 Southwestern Avenue, Chicago, has been incorporated by John M. Stemle, Anton W. Konchen and C. Knox Harding to manufacture spark plugs.

The Automatic Railway Mail Exchange Co., 308 South Wabash Avenue, Chicago, has been incorporated by M. B.

Whillpe, W. C. Biggs, and F. J. Hinkamp to manufacture apparatus for handling mail.

Morris Bargeman & Co., 66 East Randolph Street, Chicago, has been incorporated with $25,000 capital stock to manufacture machinery. The incorporators include D. H. Drill, Joseph Fischer and M. A. Barancik.

The Seric Mfg. Co., 29 South La Salle Street, Chicago, has been incorporated by H. I. Charbonneau, William E. Kaiser and G. L. Bishop to manufacture automobile accessories.

The Star Brass Works, 3120 Carroll Avenue, Chicago, will erect a plant, 47 x 159 ft., to cost $11,000.

The Illinois Brass & Aluminum Works, 719 State Street, Quincy, Ill., has commenced operations. The owners, V. J. McDevitt and J. H. Saeger, have had practical experience in brass and bronze casting work.

The Beall Pressed Steel Co., incorporated with $100,000 capital stock, has started operations at Twentieth Street and Brady Avenue, East St. Louis, Ill. It occupies a plant formerly used by the Illinois Mineral Milling Co. and will manufacture pressed steel products, including shovels, wheelbarrows, etc. Charles L. Beall, Alton, Ill., is president and treasurer.

James Shashaguay and Benjamin Harris, Holland, Mich., will open a machine shop in the Lyceum Rink Building, Seventh Street.

The Imperial Metal Products Co., Grand Rapids, Mich., manufacturer of screw machine products, has moved into its new plant on Newberry Street.

Cowles & Norton, Red Wing, Minn., have opened a new machine shop at 216 Main Street.

The Apache Powder Co., Benson, Ariz., a subsidiary of Phelps, Dodge & Co., has begun the construction of a plant for the manufacture of explosives. Approximately $5,000,000 will be invested in the enterprise.

The Kroeschell Brothers Co., 460 West Erie Street, Chicago, manufacturer of boilers, tanks, etc., has plans under way for a new one and two-story plant, 220 x 340 ft., on Diversey Street, fronting the Chicago, Minneapolis & St. Paul Railroad, estimated to cost in excess of $500,000 with equipment. Davidson & Weiss, 53 West Jackson Boulevard, are architects.

Fire, Oct. 11, destroyed a portion of the plant of the National Lead Battery Co., Aldine and Roblyn streets, with loss estimated at about $150,000, including machinery.

The Walker Axle Co., Chicago, manufacturer of automobile axles, is arranging for the erection of a new plant on Eighty-seventh Street, to cost in excess of $300,000, including machinery.

The Concrete Products Co., Cedar Rapids, Iowa, manufacturer of reinforced-concrete specialties, has completed plans for a new two-story factory, to cost about $60,000.

The Great Western Sugar Co., Denver, Colo., has plans under way for the erection of a new plant at Johnstown, Colo., to cost about $2,000,000, including machinery. E. F. Morrison, Sugar Building, Denver, is engineer.

The Cherokee County Board of Education, Columbus, Kan., is planning for the erection of an addition to the local high school to be equipped as a machine shop and for other mechanical work. It is estimated to cost about $60,000.

Baltimore

BALTIMORE, Oct. 18.

The Wizard Check Indorser & Printing Machine Co., Inc., Calvert Building, Baltimore, is having plans prepared for three one-story concrete and glass factory buildings, each 80x180 ft., for its new works in the Orangeville section. Plans also are being made for the construction of homes for employees. It will represent a total outlay of about $1,000,000. F. S. Weise is president.

With $50,000 capital stock, the Ruff-Stewart-Rust Machine Works, Norfolk, Va., has been incorporated. F. L. Stewart is president and T. M. Rust secretary.

The Norfolk Iron Works, Norfolk, Va., is receiving bids for a 60x175 ft. machine shop.

The Crawford Mill Supply Co., 438 Main Street, Winston-Salem, N. C., wants prices on engine lathes and milling machines.

The Flinn-Hill Co., Darlington, S. C., has been organized with $30,000 capital stock. T. S. Flinn is president and manager. Prices are wanted on machinery for an automobile repair shop.

The Bethlehem Shipbuilding Co., Wilmington, Del., has taken a contract for four vessels for the St. Clair Navigation Co., insuring the continuance of operations at its Harlan shipyard. The plant will soon complete its last ship under contract for the Emergency Fleet Corporation. The vessels to be built will be two 10,600-ton, and two 6,900-ton tankers.

The Bureau of Yards and Docks, Washington, has completed plans for a new one-story machine shop and testing works for the Navy Department, 82x300 ft., one-story foundry, 60x100 ft., and power plant, 70x81 ft.

The Norfolk & Western Railroad, Roanoke, Va., has awarded contract to J. P. Pettyjohn & Co., 212 Eighth Street, Lynchburg, Va., for four buildings at Bristol, Va., each one-story, for car and locomotive work, and estimated to cost about $50,000. The company has posted a notice of 20 per cent reduction of laborers and helpers at its shops, effective Oct. 15. Skilled mechanics are not as yet affected by the decreased operations.

The Carolina Steel & Iron Co., Greensboro, N. C., has acquired about six acres and plans the erection of additions to cost about $50,000.

The Potomac Electric Power Co., Washington, D. C., is arranging for a fund of $600,000 for power plant extensions and improvements.

The Automatic Soda Fountain Co., Norfolk, Va., recently incorporated with a capital of $500,000, has acquired about two acres and plans for the erection of new works for the manufacture of automatically-operated soda fountain equipment. Henry G. Barbee is president, and M. F. Wooten, general manager.

E. P. Lindsay, Portsmouth, Va., has plans under way for a new one-story wagon works, 60x100 ft., to replace the plant recently destroyed by fire. The equipment will comprise forge apparatus, belting, wood-working machinery, metal-working equipment, etc.

The Farmers' Co-Operative Cotton Grader Co., Laurens, S. C., has been incorporated with a capital of $50,000 by J. W. Boyd and G. W. Shell to manufacture cotton grading machinery and parts.

In connection with its proposed new marine railroad, the Stone Towing Co., Wilmington, N. C., will build a general machine shop, metal-working shop and wood-working plant. The project is estimated to cost about $60,000.

Cincinnati

CINCINNATI, Oct. 18.

Dullness is the main characteristic of the machinery market. While all manufacturers continue to operate their plants with full forces, there are evidences of a slowing up in shops turning out accessories, one having laid off 50 men in the past week. Some manufacturers have about caught up with orders and possibly from now on reductions in working forces will be evident. Cancellations are still coming in and one builder reports that he received more cancellations during the month of September than orders. No big lists are being figured on, though one manufacturer of milling machines and grinders is working on an order for 14 tools for a northern Ohio manufacturer. Wood-working and sugar mill machinery makers report business good, one company making the latter product having received a large order from Cuba the past week. Rumors of price cutting apparently are not well founded, as a canvass of manufacturers failed to disclose any evidences of prices being shaded. On the contrary a maker of milling machines and grinders has advanced the price of one type of milling machines 10 per cent, effective Oct. 12.

The Breeding Heat & Power Corporation, Cincinnati, has been incorporated under Delaware laws with a capitalization of $1,500,000 to put on the market an oil burning furnace invented by R. G. Breeding, Monticello, Ky. It is understood that a plant will be erected in this city next spring. John Corcoran is president. The offices are at 311 Burnet House Block.

The Cincinnati Time Recorder Co., Cincinnati, has increased its capitalization from $500,000 to $750,000 to finance the erection and equipment of a wood-working department in its plant on Central Avenue and to take care of other extensions contemplated

The Hill & Griffith Co., State Avenue, Cincinnati, has increased its capitalization from $150,000 to $250,000 to take care of an extension to its plant, contract for which has been let.

The Safety Foot Guard & Appliance Co., Columbus, Ohio, will increase its capitalization from $10,000 to $25,000.

The Lunkenheimer Co., Cincinnati, contemplates an increase of its capital common stock from $1,000,000 to $5,000,000 at a meeting of the shareholders on Nov. 16. It is understood that the increase is to finance the construction of the new plant at Hartwell, plans of which have been completed, and on part of which bids have been taken.

The Dalko Products Co., Dayton, Ohio, manufacturer of fire extinguishers, contemplates an increase in its capitaliza-

tion for the purpose of expanding its business. William Deddens, Cincinnati, is president.

The Champion Foundry Co., Piqua, Ohio, has completed the erection of its foundry and the equipment is being installed. Operations will commence shortly, grey iron castings to be the principal product for the present. J. E. Bryan is president and general manager.

The Central South

ST. LOUIS, Oct. 18.

The Heine Safety Boiler Co., St. Louis, has acquired additional land, completing a site of 15 acres adjoining its plant for extensions.

The Metallic Industries, Inc., St. Louis, controlled by the same interests as the Measuregraph Co., has acquired one of the buildings of the Dorris Motor Car Co. and will equip it for the manufacture of all steel toys and play devices. It has a capital stock of $300,000.

Fire, Oct. 12, destroyed a section of the plant of the St. Louis Car Co., St. Louis, including steel-working plant, engine and boiler department, machine and forge shop, truck shop, car erecting shop, and other buildings. The loss is estimated in excess of $650,000. Plans are said to be under way for rebuilding.

The War Department, Washington, has approved of the sale of the Old Hickory powder plant, near Nashville, Tenn., to the Nashville Industrial Corporation, Nashville, for $3,505,000, instead of $9,050,000, as noted last week. The latter figure covers the approximate amount that the Government has secured through the sale and transfer of materials and equipment.

The St. Louis Pump & Equipment Co., International Life Building, St. Louis, recently organized to manufacture rotary and other pumping machinery, will operate a temporary plant, pending the establishment of a permanent works. John C. Roberts, Jr., is president.

The addition to be erected at the plant of the Lenoir City Car Works, Lenoir City, Tenn., will be equipped to manufacture about 500,000 brass and bronze castings per month for car journals and engine bearings. Initial output will cover material for 1200 cars, which will be constructed at the plant for the Southern Railway.

The Chattanooga Plow Co., Chattanooga, Tenn., a division of the International Harvester Co., has awarded a contract to the Turner Construction Co., Atlanta, Ga., for a new plant to cost about $30,000.

Fire, Oct. 9, destroyed a portion of the plant of the American Car & Foundry Co., Jeffersonville, Ind., with loss reported at $125,000, including equipment.

The Parkersburg Rig & Reel Co., Parkersburg, W. Va., has acquired a site at Henryetta, Okla., 100x175 ft., for a branch works and plans are under way for a general machine and repair shop for oil drilling equipment.

The General Machinery & Supply Co., Pittsburg, Kan., is considering the erection of new machine works at Henryetta, Okla.

Fire, Oct. 12, destroyed the cotton ginning plant of the Bennett Cotton Co., Pine Bluff, Ark., with loss estimated at about $25,000.

The Standard Sanitary Mfg. Co., Louisville, Ky., will build a one-story brick factory at Sixth and A streets, 42x150 ft. It will cost about $40,000.

Detroit

DETROIT, Oct. 18.

No large machine tool sales are noted, although a few more replacement and single orders are reported. No change is looked for until after the first of the year.

The new plant in Battle Creek, Mich., of the Clark Equipment Co., Buchanan, Mich., which has been under construction since March 1, is nearly completed, and the work of "tooling up" for the manufacture of Clark axles will soon be in progress. Much of the machinery is ready for installation. The manufacturing building is 99 x 440 ft., with a warehouse, 50 x 144 ft. All sales, engineering, purchasing and general administration will continue to be handled through the general offices at Buchanan.

The Wright-Fisher Bushing Co., which is controlled by the Wright-Fisher Engineering Co., Detroit, will establish its new plant in Holly, Mich.

The addition to the plant of the Holland Furnace Co. of Holland, Mich., is nearly completed and will be in operation by about Nov. 1. It will be used as a foundry, and is expected to increase production by 60 per cent.

Following the sale by the King Motor Car Co., Detroit, of its main site to the United States Tire Co., is the announcement that the King company will move on Dec. 1 to its new plant, 215 x 240 ft., providing an additional 10,000 sq. ft. of floor space.

The Pontiac Iron Works, Pontiac, Mich., has been succeeded by the Pontiac Foundry & Machine Co., incorporated for $30,000, of which $26,800 is the property of James McGregor, who was president of the old company.

The General Machine & Iron Works, Detroit, will build a one-story addition, 65 x 100 ft., to cost about $60,000.

The Brass Products Co., Detroit, will soon build a new foundry and office building.

The General Spring & Wire Co., Detroit, contemplates the erection of a new one-story plant and boiler house, 200 x 250 ft., to cost about $175,000.

The E. F. Lyon Co., 14 Antoinette Avenue, Detroit, will soon build an addition to its plant, one-story, 96 x 125 ft., to cost about $15,000.

The New York Bed Spring Co., Hastings and Antoine streets, Detroit, manufacturer of metal springs, etc., will take bids at once for the erection of a three-story addition, 50 x 60 ft., to cost about $25,000.

The Defiance Combination Auto Lock Co., Detroit, has been incorporated with a capital of $40,000 by Jacob Sokolov, 1866 East Grand Boulevard, Robert N. Brown and Eric F. Weineke, Detroit, to manufacture special locks and locking devices.

The Douglas-Rudd Mfg. Co., Bronson, Mich., manufacturer of electric battery products, connections, etc., has increased its capital from $30,000 to $236,000.

The Jeffrey-Dewitt Co., Butler Avenue, Detroit, manufacturer of spark plug specialties, is planning for a five-story addition, brick and reinforced-concrete, to cost about $200,000, including equipment.

Fire, Oct. 6, destroyed a portion of the plant of the Standard Malleable Iron Co., Muskegon, Mich., with loss estimated at about $30,000. The damage was confined to the foundry.

The Great Lakes Engineering Co., River Rouge, Mich., has filed notice of change of name to the Great Lakes Engineering Works.

The Marvel Carburetor Co., 619 Mill Street, Flint, Mich., manufacturer of carburetors and ignition equipment, has filed plans for a one-story addition on St. Johns Street, to cost about $16,000.

The I. R. DuRoy Handle Co., Park Lake, near Cadillac, Mich., has acquired property at Sault Ste. Marie, Mich., and contemplates the immediate erection of a plant, 50 x 160 ft., to employ about 75 operatives.

The Michigan Land & Lumber Co., Detroit, recently organized by Henry Ford and associates, with capital of $2,000,000, has plans under way for the erection of works for the manufacture of bodies for Ford automobiles. It has a 400,000-acre tract in Michigan, and the new plant will be located in this section. Henry Ford is president; E. G. Kingsford, vice-president, and Edsel Ford, treasurer.

Cleveland

CLEVELAND, Oct. 18.

New inquiry, mostly for single machines, is coming out in moderate volume, but the amount of business placed is very light, and much less in proportion to the volume of inquiry than under normal conditions. It is becoming more evident that considerable hesitancy about placing orders is due to the expectation of lower prices. The number of buyers who ask for protection against a decline of prices is increasing and price guarantees covering six months have become more general.

Some railroad purchasing is apparently being deferred because of the hope of getting lower prices. The New York Central is understood to be in need of considerable equipment for its Collinwood shops, but after purchasing one machine the past week announced that it would buy no further equipment before January. The attitude of machine-tool builders is to adhere to present prices and there are no indications of any general price reductions in the near future. Manufacturers of automatic machinery are booking some orders, mostly for single machines, from industries outside of the automobile field.

The H. K. Ferguson Co., Cleveland, has recently taken the following orders for factory buildings: One-story brick and steel structure, 50 x 305 ft., for the Phoenix Iron Co., Meadville, Pa., to be used as a plate shop, and a two-story addition, 40 x 100 ft., to its pattern shop; two-story office and one-story warehouse and factory, providing 15,000 sq. ft. of floor space for the Cyclone Fence Co., Cleveland; one-story brick and steel factory, 85 x 125 ft., for the Lynch Glass Machine Mfg. Co., Anderson, Ind., and a one-story brick and steel factory, 100 x 222 ft., and boiler house for the

Liberty Mfg. Co., Stratford, Conn., for the manufacture of motors.

A company is being organized in Warren, Ohio, with a capital stock of $240,000, for the manufacture of drop forgings. W. Treat Davidson will be at the head.

The Lewis Motor Mfg. Co., Fostoria, Ohio, will move to Elyria, Ohio, having secured quarters in a building formerly occupied by the Elyria Machine Co.

The Garford Motor Car Co., Lima, Ohio, is erecting a building, 100 x 550 ft., to be used for a progressive assembling department.

A foundry will be placed in operation shortly in Alliance, Ohio, by the Converse Foundry Co., which has acquired a plant built for the Mann Car Indicator Co. It is being remodeled for gray iron foundry purposes.

The Bellefontaine Garage & Machine Co., Bellefontaine, Ohio, has been organized by E. E. Outland, Charles M. Stubbs and Carl Fisher. It has acquired the plant formerly occupied by the Peerless Bedding Co., and will engage in machine and automobile repair work.

The Falls Rivet Co., Kent, Ohio, has purchased the cotter pin business of the Ohio Wire Goods Co., Akron, and will move the machinery to its plant in Kent.

The Accurate Machine Co., Cleveland, is erecting a one-story addition, 60 x 180 ft.

The Gulf States

BIRMINGHAM, Oct. 18.

The National Pipe & Foundry Co., Attalla, Ala., has increased its capital from $100,000 to $525,000.

The Clarke Sanding Machine Co., Dallas, Tex., has been incorporated with a capital of $1,000,000 by A. A. Clarke, A. V. J. Hagen and J. J. Madigan, to manufacture special machinery and parts.

Fire, Oct. 10, destroyed the plant of the Cameron Cotton Compress Co., Cameron, Tex., with loss estimated in excess of $500,000.

The Gruver Threshing Machine Co., Amarillo, Tex., has been incorporated with a capital of $20,000 by P. F. Gruver, G. C. Fairey and A. B. Seanor, to manufacture agricultural machinery.

The electric power and ice-manufacturing plant of the Commonwealth Light & Power Co., Jacksonville, Tex., was destroyed by fire Oct. 10, with loss estimated at $100,000, including machinery.

The cotton gin of J. B. Jamison, Wichita Falls, Tex., was destroyed by fire Oct. 10, with loss estimated at about $25,000.

The Southern Metal Co., Lake Charles, La., has been incorporated with a capital of $50,000 by Henry Reid and Paul D. Perkins, Lake Charles, and E. H. Boling, Welsh, La., to manufacture tanks and other metal products.

The Shipping Board, Washington, D. C., has received the following bids for material and equipment at the former shipyard at Mobile, Ala., operated by Fred T. Ley & Co., 19 West Forty-fourth Street, New York: A. J. Stone, Philadelphia, $181,705; William M. Turner, Mobile, $110,025, and Alliance Equipment Co., Mobile, $101,520.

The Hodges Boiler & Machine Works Co., Mobile, Ala., has been organized with a capital of $50,000 to manufacture boilers, tanks, machinery, etc. The company is headed by Dolan G. Hodges and William W. Strong.

The St. Louis, Brownsville & Mexico Railroad, Kingsville, Tex., is planning to rebuild its local machine shops, car works and engine house, recently destroyed by fire with loss of about $500,000.

The Pacific Northwest

SEATTLE, Oct. 12.

The machine-tool market is very quiet, with purchases limited to small lots. Demand for second-hand equipment is good. A large quantity of used machinery for lumber plants is on the market, due to the shut-down of some mills at points where only rail transportation is possible. The call for motors has been fairly good, but has fallen off noticeably the past month.

Local manufacturers are benefiting from the new freight rate advances, as buyers are seeking home markets wherever possible. Some new demand from points on the coast has reached Seattle plants for materials formerly purchased in the East.

The Great Northern Concrete Shipbuilding Co., Vancouver, Wash., which built five concrete ships during the war, has filed a petition for dissolution.

The St. Helens Tie & Timber Co., St. Helens, Ore., recently incorporated for $25,000, plans the establishment of a lumber mill on Sauvies Island, with a daily capacity of 35,000 ft.

The St. Helens Shingle Co., St. Helens, Ore., recently incorporated for $50,000, will erect a shingle mill on Scappoose Bay at a cost of $40,000.

The Yaquina Harbor Lumber Co., Portland, has been incorporated for $300,000 by I. N. Smith, H. S. Amon, C. J. Sindells, for the establishment of a plant.

The East Side Mill & Lumber Co., Portland, will erect a plant in the Sellwood district. The main building will be 90 x 114 ft., but will be extended to 200 ft. in length later. New equipment will be installed.

J. Roghberg, Oregon City, Ore., plans the immediate establishment of a brass foundry and repair shop.

The Lock-Joint Flooring & Mfg. Co., Centralia, recently incorporated for $100,000, will start construction shortly on a factory to employ about 30 men. New equipment will be purchased. J. W. Gray, Tacoma, is president.

The Western Appliance Mfg. Co., Seattle, plans the immediate erection at 5623 Duwamish Avenue of a one-story factory to cost $25,000, exclusive of equipment. It will manufacture a newly designed electrical ironing machine and will have a capacity of 150 machines a month. C. N. Biggs is president.

The Hansen Store & Fixture Co., Seattle, will erect an addition at a cost of $15,000, exclusive of equipment. It will be three stories, 50 x 50 ft. Additional equipment will be installed.

Canada

TORONTO, Oct. 18.

Machine-tool houses state that inquiries are improving and some fair sized lists are making their appearance. Business, however, is not large, but prospects are bright. Despite the fact that some companies making automobiles and parts have been forced to curtail operations or close their plants on account of the falling off in demand, other manufacturers are coming forward as buyers of machinery and tools. Foundries and steel plants in this section are gradually getting into a position where they can resume operations on a more normal scale and are looked to as buyers of equipment for replacement purposes. The sale of motors and electrical equipment is more or less interfered with throughout Ontario by the scarcity of power. Deliveries have shown a great improvement in the past two months and dealers are able to promise immediate and fairly prompt shipment on most lines. Prices continue firm, and while there has been some talk of price cutting, it has so far not made its appearance. Dealers as a rule expect to see present quotations hold until after the end of the year.

The Bogart-Carlough Corporation, Paterson, N. J., manufacturer of steel sash and allied products, will establish a plant at London, Ont., and has secured temporary quarters at Bathurst and Adelaide streets.

The Steel Co. of Canada, Hamilton, Ont., will build an addition to its plant to increase its output of wire and wire products.

The International Paper Co., Montreal, will build another paper and pulp mill, in addition to the plant in course of erection at Three Rivers, Que., which will be turning out pulp in 60 days. The mill, which will have a capacity of 200 tons of newsprint a day, will not be completed for several months. The company is not yet ready to make announcement as to the location of the mill under contemplation. P. P. Dodge is president.

The National Castings, Ltd., Belleville, Ont., has been incorporated with a capital stock of $50,000 by Normand L. Turner, Frederick Daniels, Fred Wheeler and others.

Abrasives, Ltd., Brantford, Ont., has been incorporated with a capital stock of $600,000 by William T. Henderson, Albert H. Boddy, Christopher Cook and others to manufacture abrasives, tools, machinery, etc.

The Hanover Portland Cement Co., Hanover, Ont., is enlarging its plant and will install machinery to increase its output.

The Yellowhead Coal Co., Coalspur, Alta., will build a coal handling plant to cost $2,000,000. G. H. Eaton is general manager.

The Mann Axe Co., Ltd., St. Stephen, N. B., has started construction on a factory to cost $50,000.

Additional contracts have been awarded for the factory to be established at 153 Dufferin Street, Toronto, for the Exide Battery Co. of Canada, Ltd. An extension will also be erected to the present building at a cost of $50,000.

Work will start at once on three buildings at London, Ont., for the Service Motor Truck Co., Wabash, Ind., which will be the first units of a plant to ultimately cost $5,000,000.

The DeLaval Co., Ltd., Peterboro, Ont., is in the market for a reciprocating steam driven generating unit, to operate under approximately 115 lb. steam pressure, 5 lb. back pressure, capacity approximately 125 kw., 220 volts 3-phase 60-cycle. It will consider a used unit in good condition.

N. J. McArthur, 325 Howe Street, Vancouver, B. C., is in the market for a 500 to 600-hp. Corliss engine, also 72-in. roller-band resaw; 250 tons 40 or 50-ft. rails; 5-ton locomotive crane.

R. C. Patterson, Smithville, Ont., is in the market for 8-in. horizontal, 54-in. and 66-in. upright band resaws; steam engines, 35 to 125-hp.; 36-in. gang saw grinder, planers, edgers and sprocket chain.

John B. Smith & Sons, Toronto, Ont., are in the market for a 20 to 30-ton saddle tank standard gage locomotive.

The Crane Co., Ltd., 88 Terauley Street, Toronto, has had plans prepared by William Steele & Son, architects, Ryrie Building, Toronto, for a pipe shop. Bids are being received by the architects.

The Oneida Community Co., Niagara Falls, Ont., has let the general contract for a manufacturing building to Bancroft-Jones, Buffalo, N. Y.

The Ross Electric Appliances, Ltd., Toronto, has been incorporated with a capital stock of $40,000 by Charles A. Barron, 268 Sherbourne Street, John H. Ross, William N. Irwin and others to manufacture electrical supplies and appliances, motors, etc.

The Precision Tool Works, Ltd., Toronto, has been incorporated with a capital stock of $40,000 by Reginald Homer, 99 Strathmore Boulevard; Henry S. Moore and others to manufacture metal tools and dies, stampings, etc.

The Motor Sundries Corporation, Ltd., Toronto, has been incorporated with a capital stock of $500,000 by Russell P. Locke, 120 Bay Street, Grant Cooper, Howard A. Hall and others, to manufacture automobiles, motorcycles, parts engines, etc.

Construction will start immediately on an addition to the plant of the Andrews Wire Works of Canada, Ltd., Watford, Ont. It will be of brick, with steel sash and concrete floors, and a blower system of heating will be installed. When completed the building will give an additional 75,000 sq. ft. of floor space, and with the installation of new machinery the company will greatly increase its output of wire products.

The J. H. Charles Co., Ltd., Dunnville, Ont., recently formed, has taken over the foundry formerly operated by the Canadian Engines, Ltd., and will manufacture gray iron castings. The officers are T. J. McCutcheon, president; Robert Bradford, vice-president; J. H. Charles, secretary-treasurer and general manager.

The mill owned by the Frank Beban Sawmill Co., Extension, B. C., recently destroyed by fire with a loss of $75,000, will be rebuilt at once. The company is interested in prices on equipment.

The Canadian Western Door Co., Mission City, B. C., will erect a factory to cost $135,000 and have an initial capacity of 1000 doors. It will include a main building, 70x400 ft., and two dry kilns. Electrically operated equipment will be installed.

The British Columbia Cement Co., Victoria, B. C., has taken over the Bamberton Cement Works and will overhaul the equipment and install additional machinery to operate the plant to capacity as soon as repairs can be made.

The Dominion Lock Joint Pipe Co., Ltd., Hamilton, Ont., has been incorporated with a capital stock of $50,000 by Cecil V. Langs, Ewart G. Binkley, Howard Norwick and others to manufacture Portland cement brick, lock-joint pipe, etc.

Burroughs Machines, Ltd., Windsor, Ont., has been incorporated with a capital stock of $1,000,000 by Sydney E. Wedd, 85 Bay Street; Roy B. Whitehead, Bruce V. McCrimmon and others, all of Toronto. It is building a factory at a cost of $250,000 for the manufacture of adding and other machines.

California

LOS ANGELES, Oct. 12.

The Berger & Carter Co., 365 Market Street, San Francisco, manufacturer of iron and steel products, including dehydrating machinery for fruit factories, is considering plans for the removal of its works to San Jose, Cal., where increased facilities will be provided.

The Dunann Visual Centrifugal Oiler Co., Los Angeles, has been organized to manufacture oiling devices and equipment. Henry E. Bean and W. J. Wallace, Los Angeles, head the company.

The San Diego Consolidated Gas & Electric Co., San Diego, Cal., has plans under way for an increase in its capital to $14,000,000, to provide funds for a new hydro-electric generating station. It is proposed to build a number of plants, the first on Pauma Creek, and estimated to cost about $250,000.

The National Semaphore Co., Cedar Rapids, Iowa, manufacturer of railroad signal equipment, is considering plans for a branch factory at Willows, Cal. A site is being selected. It is also planned to build branch works in southern California.

The Standard Machine & Auto Works, 88-92 North Delacy Street, Pasadena, Cal., has been organized to manufacture automobile parts, and operate a general machine works. Warren Howell and Gardner Sherburne, 974 Stephenson Avenue, Pasadena, head the company.

The Delhi Mining Co., Grass Valley, Cal., has perfected plans for a new hydroelectric power plant on Bloody Run. The installation will comprise two large electric generators and auxiliary operating machinery. It is planned to have the first section of the works ready for service by the spring of 1921. Harry Skewes is superintendent.

The Atchison, Topeka & Santa Fe Railroad Co., Los Angeles, is planning the erection of a new forge shop and power plant at its shops at San Bernardino, Cal.

The Pomona Sheet Metal Works, Pomona, Cal., has been organized to manufacture metal products, with plant at 150-58 East Third Street. E. R. Aunger, 950 North Eleanor Street, Pomona, heads the company.

The Pioneer Brick & Tile Co., Fresno, Cal., has been incorporated with a capital of $500,000 by John and A. E. Etzenhouser, and J. W. Fewel to manufacture clay products.

The Garden Court Motors Corporation, Los Angeles, has been incorporated with a capital of $500,000 by W. L. Jourden, A. C. Shepherd and F. A. Hartwell, Los Angeles, with registered office at 310 American Bank Building, to manufacture automobile motors and other equipment.

The Potter-Strutz Radiator Co., Los Angeles, has been incorporated with a capital of $75,000 by T. J. Potter, A. J. Strutz and E. G. Matthews to manufacture automobile radiators and other metal equipment.

The California Automatic Light Co., 715 South Flower Street, Los Angeles, has been organized to manufacture electric and other lighting equipment. F. P. Clarke heads the company.

The Hadley Tag & Machine Co., Los Angeles, has been incorporated with a capital of $200,000 by C. R. Hadley, T. R. Tingle and Carl A. Monson, to manufacture special machinery and parts.

OFFICE CHANGES

The Detroit office of the Davis-Bournonville Co., manufacturer of oxy-acetylene cutting and welding apparatus, has been moved to 418 Book Building, with Harrison Bird, district sales manager, in charge.

The Boyle Mfg. Co., Los Angeles, Willis J. Boyle, Sr., president, sheet steel, announces the opening of general sales offices at 21 Sutter Street. The former Eastern and Northwestern operator, Thomas M. Gardiner, will be San Francisco manager in charge.

The Sizer Forge Co., Buffalo, has reopened its Pittsburgh sales office, located at 601 Bessemer Building. David A. Stuart is district sales manager.

The Norton Co., Worcester, Mass., grinding machines and grinding wheels, has established a branch office for its grinding machines division at 304 Penway Building, Indianapolis, with Walter F. Rogers in charge, and another at 230 Fifth Avenue, Pittsburgh, room 800, with Paul R. Hawkins in charge.

Warren Webster & Co., Camden, N. J., feed water heaters, have established a branch office at 15 East Fayette Street, Baltimore, Md., and have appointed Louis G. Vance as Baltimore district manager.

George Oldham & Son Co., Philadelphia, has moved its offices and manufacturing plant to Scott & McHenry streets, Baltimore, Md.

On Oct. 15 the general offices of the Philadelphia Roll & Machine Co., Twenty-fifth Street and Washington Avenue, Philadelphia, were located at Fifty-second Street and Grays Avenue.

R. D. Nuttall Co., Pittsburgh, manufacturer of gears, pinions and flexible couplings, has opened new and permanent quarters at 429 Title & Trust Building, Philadelphia, in charge of R. F. Fiske, to handle direct all business other than electric railroad and mine haulage supplies.

C. W. Hendley & Co., coke and coal, have moved their offices to 1512-1518 Fidelity Building, Baltimore, Md.

The Charles Co., specializing in raw materials and metallic products, has moved its office to 298 Broadway, New York.

INDUSTRIAL FINANCES

Decline in Shipbuilding Reflected in Report of a Cleveland Company

The slump in the shipbuilding industry during the past year is reflected in the report of The American Shipbuilding Co., Cleveland, for the fiscal year ended June 30, last, which shows a total of 69 ships completed in that period, as compared with 109 during the previous year, a decrease of 40. The financial statement, however, makes a favorable showing, all things considered.

The gross income of the company was $11,039,803, or $9,835,254 less than it was for the year ended June 30, 1919, but $6,382,059 less went for administration and general expenses, state, county and miscellaneous taxes, maintenance and repairs and depreciations, and $2,609,254 less for Federal taxes, adjustments on Liberty bond market values, etc., so that the net earnings for the past year, $2,995,294, were only $789,140 smaller than those for the previous year. Preferred stock dividends were maintained at $553,000, while common disbursements were reduced from $1,805,000 to $1,216,000, consequently a surplus of $1,226,294 for the past year was shown, contrasted with one of $1,426,434 for the year ended June 30, 1919.

Due primarily to the reduction of work done for the United States Shipping Board Emergency Fleet Corporation, the total assets and liabilities of the company dropped from $152,584,437 to $37,456,475, between June 30, 1919, and June 30, 1920. Inventories alone shrunk from $29,184,814 to $2,713,723.

President M. E. Farr, in his remarks to the stockholders, says that the outlook for repair, replacement and reconditioning work for the new year is good and that the company is well equipped to handle its full share of such lake business. The outlook for deep sea service ships, however, is not as bright, unless there is a decided change in the foreign exchange situation.

The Jewell Belting Co., Hartford, Conn., is offering through New England bankers $500,000 8 per cent cumulative preferred stock, the proceeds of which will be used as additional working capital. The company is about to move to its new plant opposite Charter Oak Park, which is equipped with modern machinery.

The Laconia Car Co., Laconia, N. H., has sold to bankers $700,000 three-year 8 per cent serial notes to provide working capital. The company has $1,800,000 of unfilled orders on its books, or sufficient to keep its plants busy for eight months.

The Worcester Ornamental Iron Co., 136 Green Street, Worcester, Mass., a going concern, has been incorporated under Massachusetts laws with a capital of $30,000, divided into 300 shares, par $100, of which 200 shares are issued. Elmer E. Dow, Worcester, is president; Dwight E. Clark, Shrewsbury, vice-president, and Herman L. Dow, Worcester, treasurer.

The M. A. Palmer Co., 385 Atlantic Avenue, Boston, a going concern, has taken out a Massachusetts charter to deal in bar and sheet steel in a wholesale and retail way. The company is capitalized for $50,000, divided into 500 shares, par $100, all of which are issued. Melvin A. Palmer, 82 Wicklow Avenue, Medford, Mass., is president and treasurer.

Edwin G. Norton, attorney; Frank Kilmer, Wickwire-Spencer Steel Corporation, and William Woodward, all of Worcester, Mass., have been appointed temporary receivers for the Walden-Worcester, Inc., that city, wrenches, and have been ordered by the court to continue the business. The petition asking for the receivership states that the company has assets approximately $300,000 in excess of its liabilities, and is solvent, but by reason of a large inventory the assets are not sufficiently liquid to meet the present obligations and the company desires more time in which to work itself out of its present difficulties. Lewis E. Bellows is president, and Warren S. Bellows, treasurer.

A most decided gain in profits for the third quarter, 1920, over the corresponding period of 1919, has been experienced by the Lackawanna Steel Co., whose net profit this year's period was $3,282,144, after all deductions, contrasted to $343,328 in 1919. Unfilled orders at the end of this year's third quarter amounted to 277,482 gross tons, against 178,981 gross tons a year ago. Total net earnings for the current quarter were $4,443,931, against $1,184,674. The profit for nine months of 1920 was $4,714,370, against $1,317,350 the year before. Total net earnings were $7,566,949, compared with $3,629,423.

Holders of unpaid Groton Iron Works, Groton, Conn., notes dated April 3, 1920, and maturing Oct. 4, have accepted 20 per cent in cash and the rest in new notes which are secured by $600,000 serial coupon Virginia Shipbuilding Co. bonds.

The directors of Landers, Frary & Clark, New Britain, Conn., cutlery, etc., have recommended that the capital stock be increased $1,000,000, and the new shares sold to stockholders at $25 each. The stockholders have been asked to authorize the increase at a meeting Nov. 2. The present capitalization is $6,000,000. Funds derived from the sale of the stock will be used in part for new construction.

Stockholders of the Graton & Knight Mfg. Co., Worcester, Mass., leather belting, etc., recently authorized an increase of $3,000,000 in the common stock, to be issued as a stock dividend, in the ratio of three new for each two held. The new issue will make $5,000,000 common stock outstanding, and the total capitalization outstanding $12,000,000.

At a meeting of the board of directors the Iron & Ore Corporation of America, 11 Broadway, New York, recently declared a stock dividend of 25 per cent, payable in fully paid common stock. The company does an export business with Belgium, Holland, France, England, Scandinavian countries and the Dutch East Indies.

The report of the Superior Steel Corporation, Pittsburgh, for the 6 months ended June 30, shows net sales of $6,451,843, gross profits of $1,980,510, other income of $49,942. The net income was $1,794,381. Surplus of the company which Jan. 1, 1920, stood at $731,252, amounted June 30, to $1,323,212 after dividends, taxes and sinking fund disbursements.

An increase from 250,000 to 350,000 shares, or from $1,250,000 to $1,750,000 in the capitalization of the Penn Seaboard Steel Corporation, has been authorized by the stockholders.

Through bankers the Greenfield Tap & Die Corporation, Greenfield, Mass., is offering for public subscription $2,255,000 8 per cent cumulative preferred stock, par $100, a part of a $5,000,000 issue. The concern has an authorized capitalization of $11,500,000, of which $6,755,000 is outstanding. There never has existed a bonded debt on the property.

The Crofoot Gear Works, Inc., Hyde Park, Boston, through bankers, is offering for public subscription an issue of 8 per cent cumulative preferred stock, par $100.

The report of the Pittsburgh Steel Co. for the year ending June 30 shows gross sales of $27,572,221.48, as against $31,265,012.37 in 1919, a decrease of $3,512,790.89. Net profits after setting aside estimated income and excess profit taxes were $1,961,458.56, as compared with $2,771,546.75 in 1919, a decrease of $810,088.19.

Truscon Steel Co., Youngstown, Ohio, has declared a quarterly dividend of 4 per cent on common stock, payable Oct. 15 to stockholders of record Oct. 5.

R. H. McElroy has been appointed receiver for the Bahmann Iron Works, Dayton, Ohio, manufacturer of clay-working and sugar making machinery. The company has on hand contracts amounting to $600,000, and the receiver was authorized to continue with the operation of the business. The receiver was asked to protect the equity of the stockholders in the company's assets, which are claimed to be far in excess of its liabilities.

The Supreme Motors Co., Warren, Ohio, has given the Citizens Savings & Trust Co., Cleveland, trustee, a mortgage of $500,000 on its property in Warren. It consists of first mortgage 7 per cent convertible gold bonds, dated as of Oct. 1, 1920, and of the denomination of $100, $500 and $1000. The proceeds will be employed by the company to meet an indebtedness and to expand its business.

Earnings of Various Companies

The net sales of the National Acme Co., screw machines and screw machine products, for August were $1,698,171, or $486,947 more than those for the corresponding month last year. The net profits before allowing for Federal taxes were $369,996, an increase of $70,283. Net sales for the eight months ended Aug. 31, last, were $4,190,365 larger than those for a like period last year, and the net profit before Federal taxes, $1,712,583 larger, being $11,868,222 and $3,789,686, respectively.

For the six months ended June 30, last, the Superior Steel Corporation showed net sales of $6,451,843, contrasted with $3,056,041 in August, 1919, an increase of $3,395,802. The gross profit was $1,980,510, an increase of $1,310,688, and the net income $918,072, an increase of $593,006. For that half year period there was a surplus of $591,763, against one of $19,043 last year, an increase of $572,720. This showing is all the more gratifying in view of the fact that the company this year allowed $714,357 more than it did in 1919 for depreciation, Federal taxes and the sinking fund, and paid $20,286 more in dividends.

BOOK REVIEWS

Personnel Administration. By Ordway Tead and Henry C. Metcalf, Ph. D., members of the Bureau of Industrial Research, New York. Pages xii + 538, 6 x 9 in. Published by the McGraw-Hill Book Co., 239 West Thirty-ninth Street, New York.

To those who are interested in personnel management—and who is not in these days of multitudinous labor difficulties?—this book stands out particularly for the importance put on mind conditions among working men and women in the plant. A proper consideration of fundamental psychological principles by industrial leaders in the handling of their work-people, to line them according to their desires, aptitudes and special faculties, is seldom given. However, the new focus in administration, as stated by the authors of this book, is to be the human element and this can be obtained only by close study of what and how the men and women in the working ranks think. The authors have gathered a great mass of data on personnel management in this single volume and for the factory head or personnel student wishing to make a comprehensive survey of the subject it offers discussion on practically every phase thereof or gives numerous leads in the excellent bibliographies appended to each chapter.

Throughout the book emphasis is placed on the need of making the administration of personnel affairs a major staff function. The personnel executive should be on a parity with the productive executive, and both should in turn be members of the executive or operating committee of the company. The point of view of the personnel manager as to how the ends of production can be best furthered, however, is a special one, the authors go on to say, and since he must approach production problems with the idea of engaging the workers' interest in their work, he may at times be unable to subscribe to proposed policies of immediate expediency which are dictated by motives of selfishness or profit aggrandizement.

The second chapter on "Human Values in Industry" dwells on all those human traits—love of family, creative impulse, desire to possess, curiosity, desire for association, desire for approval, desire for justice, love of beauty and love of goodness—a review of which helps to make the study of industrial relations the fascinating study that it really is. The personnel manager, therefore, "must have as definite an idea as possible of the elements in human well-being—of those qualities in individuals which are native, fundamental, socially useful and worthy of fuller release and development than they now enjoy. In a word, it is a peculiarly important duty of all who direct people to know all they can about human nature and about a standard of human values in life which such knowledge suggests." The various instincts that got such interesting treatment in Mr. Tead's earlier book, "Instincts in Industry," are briefly covered in this chapter.

The authors go into considerable detail regarding the reasons for and the functions of a personnel department. For administrative purposes, they state, the work may be divided as follows: Employment, health and safety, education, research, service, adjustment and joint relations. The book is divided into sections under these various headings. In the section on employment they make a plea for a public employment system and for managers to use it and co-operate with it even if results do not seem at first to warrant the attempt. The authors also make a strong case for scientific methods of hiring in a chapter on "Methods of Selection and Placement."

Some worthwhile information is contained under the heading of Education in the chapters on "Training Executives," "The Problem of Foremanship," "Training Employees," "The Company Magazine," "Arousing Interest in Work," "Transfer and Promotion," and "Shop Rules, Grievances and Discharge." The chapter on that always important and at times enigmatic person, the foreman, is especially good. The attitude of the usual foreman, we are told in this chapter, is colored by four facts; his success in rising from the ranks; his lack of education; his fatigue; and his effort to overcome a sense of divided loyalty.

In the section on "Rewards" the chapter on "The Elements in Wage Determination" is also worthy of mention. There is no such thing as an "absolutely fair wage," they declare. Once managers realize that there are no absolutes in the solution of the payment problem, the authors go on to point out, three-fourths of the uneasiness and petulance about wage adjustments will automatically disappear. The various factors which should be considered in determining a suitable wage such as cost of living, amount of output, quality, material, cost, time factors, previous education, etc., are also discussed in this chapter.

"Joint Relations" is the heading of the last section in this weighty volume which contains chapters on such important topics as "Principles of Shop Committee Organization," "Methods of Shop Committee Organization," "Employees' Associations," "The Business Value of the Collective Bargain," "Employers' Associations," "National Industrial Councils" and "The Purpose of Industrial Government." The collective agreement, the authors hold, tends to equalize the bargaining status of workers and employers. Surprising as it may seem, they assert this is of advantage to the employer.

It is a long book and may perhaps be criticised because of that fact. To the reader who has read much on the subject of industrial relations there seems also to be a lack of the verve and enthusiasm that so often fire books of this type. In places it appears, in fact, to be more a compilation of information gathered by others and in the double treatment has lost some of its force.

Mine Bookkeeping. By Robert McGarraugh. Pages 118, 6 x 9 in., 46 illustrations. Published by McGraw-Hill Book Co., 239 West Thirty-ninth Street, New York.

A practical method of cost keeping and a comprehensive system of records and accounts for mining operations of moderate dimensions are described in this little volume. The author declares that the system outlined can be maintained at a minimum of office expense. The book aims throughout to eliminate unnecessary posting and copying and to get the accounts into their final form with the fewest possible intermediate operations. More than 40 model forms are included as suggestions in keeping records and accounts. There is also an excellent discussion of the records and accounts needed in connection with the operation of company mercantile stores.

The Business Man and His Bank. By William H. Kniffin, vice-president Bank of Rockville Center, Long Island, N. Y. Pages 278, 8 x 5½ in. Published by the McGraw-Hill Book Co., 239 West Thirty-ninth Street, New York.

Banking is a subject that bothers numerous business men. This book is written in a way and deals with phases of bank procedure that should be of particular use to men in business and therefore it will fulfill a real purpose. As the author points out in his introduction, his aim in writing the book has been to treat the bank from without rather than from within, as is the case with so many books prepared especially for use by bank clerks or students of banking. After describing the various types of banking institutions, the author takes up such subjects as "Choosing Your Bank," and "The Point of Contact." Then follow several chapters on how checks should be made out and indorsed and on the various channels through which a check may pass. Other chapters deal with credit, loans, collections and exchange.

McConway & Torley have started operations at the Valley Steel Works, Fifty-fifth Street and Allegheny Valley Railroad, Pittsburgh. This plant, which formerly produced malleable iron castings, has been converted into a rolling mill and will roll soft steel and forging ingots 4 x 4 in. and 5 x 5 in. soft steel bars in sizes from ¾ to 2½ in. in rounds, squares, hexagons and flats.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Iron and Soft Steel Bars and Shapes

	Per Lb.
Bars:	
Refined iron, base price	5.50c.
Swedish bars, base price	20.00c.
Soft Steel:	
¾ to 1⅞ in., round and square	3.48c. to 4.75c.
1 to 6 in. x ⅜ to 1 in.	3.48c. to 4.75c.
1 to 6 in. x ¼ to 5/16	3.58c. to 4.75c.
Rods—⅝ and 11/16	3.53c. to 5.45c.
Bands—1½ to 6 by 3/16 to No. 8	4.18c. to 7.00c.
Hoops	5.68c. to 7.00c.
Shapes:	
Beams and channels—3 to 15 in.	3.58c. to 4.50c.
Angles:	
3 in. x ¼ in. and larger	3.58c. to 4.50c.
3 in. x 3/16 in. and ⅛ in.	3.83c. to 5.10c.
1½ to 2½ in. x ⅛ in.	3.63c. to 4.90c.
1½ to 2¾ in. x 3/16 in. and thicker	3.58c. to 4.85c.
1 to 1¼ in. x 3/16 in.	3.63c. to 4.90c.
1 to 1¼ in. x ⅛ in.	3.68c. to 4.95c.
⅞ x ⅞ x ⅛ in.	3.73c. to 5.00c.
¾ x ⅛ in.	3.78c. to 5.05c.
⅝ x ⅛ in.	4.18c. to 5.95c.
½ x 3/32 in.	5.28c. to 7.65c.
Tees:	
1 x ⅛ in.	3.98c. to 5.90c.
1¼ in. x 1¼ x 3/16 in.	3.88c. to 5.80c.
1½ to 2½ x 3/16 in. and thicker	3.68c. to 5.60c.
3 in. and larger	3.63c. to 5.30c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	5.40c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	5.90c.
Toe calk, ½ x ⅜ in. and larger	6.00c.
Cold-rolled strip (soft and quarter hard)	12c. to 14c.
Open-hearth spring steel	7.00c. to 10.00c.
Shafting and Screw Stock:	
Rounds	6.25c. to 7.00c.
Squares, flats and hex	6.75c. to 7.50c.
Standard cast steel, base price	15.00c.
Best cast steel	20.00c. to 24.00c.
Extra best cast steel	25.00c. to 30.00c.

Tank Plates—Steel

¼ in. and heavier	3.78c. to 4.50c.

Sheets

Blue Annealed

	Per Lb.
No. 10	7.25c. to 8.30c.
No. 12	7.28c. to 8.35c.
No. 14	7.35c. to 8.40c.
No. 16	7.45c. to 8.50c.

Box Annealed—Black

	Soft Steel C.R., One Pass Per Lb.	Wood's Refined, Per Lb.
Nos. 18 to 20	8.40c. to 9.90c.	.....
Nos. 22 and 24	8.45c. to 9.85c.	10.80c.
No. 26	8.50c. to 9.90c.	10.85c.
No. 28	8.60c. to 10.00c.	11.00c.
No. 30	8.70c. to 10.10c.	.....

No. 28, 36 in. wide, 10c. higher.

Galvanized

	Per Lb.
No. 14	8.85c. to 11.00c.
No. 16	9.10c. to 11.25c.
Nos. 18 and 20	9.25c. to 11.40c.
Nos. 22 and 24	9.40c. to 11.55c.
No. 26	9.55c. to 11.70c.
No. 27	9.70c. to 11.85c.
No. 28	9.85c. to 12.00c.
No. 30	10.35c. to 12.50c.

No. 28, 36 in. wide, 20c. higher.

Pipe

Standard—Steel	Blk.	Galv.	*Wrought Iron*	Blk.	Galv.
½ in. Butt...	—34	—17	¾-1½ in. Butt.	— 3	+17
¾-3 in. Butt.	—38	—22	2 in. Lap.....	+ 3	+21
3½-6 in. Lap.	—33	—18	2½-6 in. Lap..	+ 1	+17
7-12 in. Lap..	—23	— 6	7-12 in. Lap...	+12	+30

Steel Wire

BASE PRICE* ON No. 9 GAGE AND COARSER	Per Lb.
Bright basic	10.00c.
Annealed soft	10.00c.
Galvanized annealed	10.75c.
Coppered basic	10.50c.
Tinned soft Bessemer	12.00c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE	
High brass sheet	27¼c. to 28½c.
High brass wire	27¼c. to 28½c.
Brass rod	25¾c. to 28 c.
Brass tube	42½c. to 44½c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 27½c. to 28½c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20		
	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Primes	Wasters
			80 lb...	$11.80	$11.55
			90 lb...	11.90	11.65
			100 lb...	12.00	11.75
IC...	$16.50	$14.25	IC...	12.25	12.00
IX...	18.75	16.25	IX...	13.25	13.00
IXX...	20.50	18.00	IXX...	14.25	14.00
IXXX...	22.25	19.75	IXXX...	15.25	15.00
IXXXX...	23.75	21.50	IXXXX...	16.25	16.00

Terne Plates

8-lb. Coating 14 x 20

100 lb.	$ 9.35
IC	9.50
IX	10.50
Fire door stock	12.75

Tin

Straits pig	43c.
Bar	50c. to 55c.

Copper

Lake ingot	18½c.
Electrolytic	18¼c.
Casting	18c.

Spelter and Sheet Zinc

Western spelter	9¼c. to 9¾c.
Sheet zinc, No. 9 base, casks	15c. open 15½c.

Lead and Solder*

American pig lead	8½c. to 9c.
Bar lead	9½c. to 10½c.
Solder, ½ and ½ guaranteed	32c.
No. 1 solder	29½c.
Refined solder	25½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	90c.
Commercial grade, per lb.	50c.

Antimony

Asiatic	8½c. to 9½c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....35c. to 38c.

Old Metals

It is difficult to reflect the market, as business is at a standstill. Dealers refuse to purchase, expecting lower values, and prices quoted are nominal. Dealers' buying prices are reported as follows:

	Cents Per Lb.
Copper, heavy and crucible	13.50
Copper, heavy and wire	12.50
Copper, light and bottoms	11.00
Brass, heavy	8.25
Brass, light	6.00
Heavy machine composition	13.25
No. 1 yellow brass turnings	8.00
No. 1 red brass or composition turnings	11.00
Lead, heavy	6.00
Lead, tea	4.00
Zinc	5.00